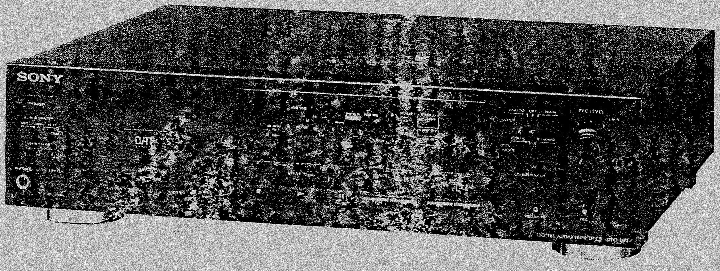
DTC-690

SERVICE MANUAL

US Model
Canadian Model
AEP Model



SPECIFICATIONS

Tape	Digital audio tape
Recording head	Rotary head
Recording time	Standard: 120 minutes. Long-play mode: 240 minutes (with DT-120)
Tape speed	Standard: 8.15 mm/s, Long play mode: 4.075 mm/s
Drum rotation	Standard: 2,000 rpm, Long-play mode: 1,000 rpm
Error correction	Double Read Solomon code

Tape

Track pitch	13.6 µm (20.4 µm)
Sampling frequency	48 kHz, 44.1 kHz, 32 kHz
Modulation system	8-10 Modulation
Transfer rate	2.46 Mbit/sec.
Number of channel	2 channels, stereo
D/A conversion (Quantization)	Standard: 16-bit linear Long-play mode: 12-bit non-linear
Frequency response	Standard: 2–22,000 Hz (±0.5 dB) Long-play mode: 2–14,500 Hz (±0.5 dB)
Signal to noise ratio	Standard: more than 90 dB Long-play mode: more than 90 dB
Dynamic range	Standard: more than 90 dB Long-play mode: more than 90 dB
Total harmonic distortion	Standard: less than 0.005% (1 kHz) Long-play mode: less than 0.08% (1 kHz)
Wow and flutter	Below measurable limit (±0.001% W. PEAK)

Model Name Using Similar Mechanism	DTC-59ES
Tape Transport Mechanism Type	DATM-102

Input

	Jack type	Impedance	Rated input level
LINE IN	phono jack	47 kohms	–4 dBs
DIGITAL IN	phono jack	75 ohms	0.5 Vp-p, ±20%
DIGITAL IN	optical jack	—	—

Output

	Jack type	Impedance	Rated output	Load impedance
LINE OUT	phono jack	470 ohms	–4 dBs	More than 10 kohms
PHONES	stereo phone jack	220 ohms	1.3 mW	32 ohms

DIGITAL OUT (optical jack): wavelength 660 nm

– continued on next page –

MICROFILM

DIGITAL AUDIO TAPE DECK

SONY®

General

Power requirements	120V AC, 60Hz (US, Canadian model) 220/230V AC, 50/60Hz 110 - 120V or 220/240V AC 50/60Hz
Power consumption	31 W
Dimensions	Approx. 430 x 110 x 350 mm (w/h/d) (16 $^{15}/_{16}$ x 4 $^{3}/_{8}$ x 13 $^{7}/_{8}$ inches)
Weight	Approx. 5 kg (11 lb)

Remote commander (supplied)

Remote control system	Infrared control
Power requirements	3V DC, with two size AA (R6) batteries
Dimensions	Approx. 40 x 20 x 175 mm (w/h/d) (1 $^{9}/_{16}$ x $^{13}/_{16}$ x 7 inches)
Weight	Approx. 100 g (4 oz) incl. batteries.

Supplied accessories

Remote commander RM-D690A (1)
Sony batteries SUM-3(NS) (2)
Audio connecting cords (2 phono plugs - 2 phono plugs, stereo for line inputs and outputs) (2)

Design and specifications are subject to change without notice.

Accessories not supplied

Optical cable	POC-15, POC-10HS etc.
Connecting cord	RK-C710HS, etc. (2 phono plugs - 2 phono plugs: connectors plated with gold, high fidelity LC-OFC line cord) VMC-1ES, etc. (phono plug - phono plug): for digital connection
Cleaning cassette	DT-10CL

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT
À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER SES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

TABLE OF CONTENTS

Section Title Page

1. GENERAL

Features 4
Location and Function of Controls 5
Connections 9
2. DISASSEMBLY 11
3. ADJUSTMENTS 14
3-1. Electrical Adjustments 16

4. DIAGRAMS

4-1. Circuit Boards Location 19
4-2. Block Diagram 20
4-3. Waveforms 23
4-4. Semiconductor Lead Layouts 25
4-5. Printed Wiring Boards - MD / Power supply / Display section - 27
4-6. Schematic Diagram - MD / Power supply / Display section - 31
4-7. Printed Wiring Boards - Main section - 36
4-8. Schematic Diagram - Main section - 39
4-9. IC Block Diagrams 43
4-10. Pin Functions 47

5. EXPLODED VIEWS

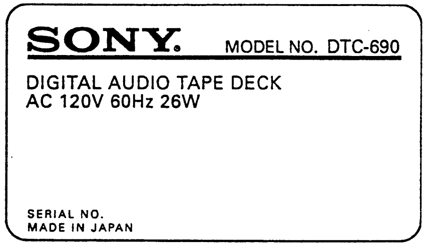
5-1. Cabinet Section 55
5-2. Front Panel Section 56
5-3. Chassis Section 57
5-4. Mechanism Section 1 58
5-5. Mechanism Section 2 59
5-6. Mechanism Section 3 60
5-7. Mechanism Section 4 61
6. ELECTRICAL PARTS LIST 62

PRECAUTIONS FOR INSPECTIONS AND REPAIR WITH POWER OFF

Before beginning repair work after turning OFF the main switch, be sure to first remove CN932 (EH8P) of the power board. When assembling the equipment, be sure to plug this connector last.
Even with the main switch turned off, there still remain electrical charges in part of the power circuit. Therefore, plugging in or removing the connector could cause the power supply terminal to short with an adjacent terminal. This could cause possible component damage.

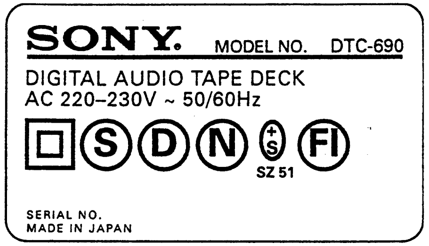
MODEL IDENTIFICATION

– Model Number Label –



SONY. MODEL NO. DTC-690
DIGITAL AUDIO TAPE DECK
AC 120V 60Hz 26W
SERIAL NO.
MADE IN JAPAN

US, Canadian model



SONY. MODEL NO. DTC-690
DIGITAL AUDIO TAPE DECK
AC 220–230V ~ 50/60Hz
SZ 51
SERIAL NO.
MADE IN JAPAN

AEP model

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer: Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig.A)

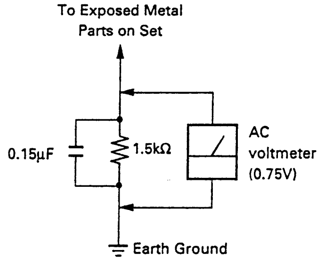


Fig. A. Using an AC voltmeter to check AC leakage.

This section is extracted from instruction manual.

Features

Serial copy management system (SCMS)
This unit utilizes the serial copy management system that permits digital-to-digital recording for one generation. You can record CD sound or other digital formats through a digital-to-digital connection. (See page 54.)

Three sampling frequencies
Recording/playback can be done with three sampling frequencies (48 kHz, 44.1 kHz and 32 kHz).
48 kHz: For analog and digital input signals in a standard mode.
44.1 kHz: For compact disc and pre-recorded DAT tape.
32 kHz: For analog input signals in a long-play mode.

Long play mode
This unit can operate in a long-play mode. Analog input signals can be recorded or playback for up to four consecutive hours when the DT-120 DAT cassette tape is used. The sampling frequency will be 32 kHz in the long-play mode.

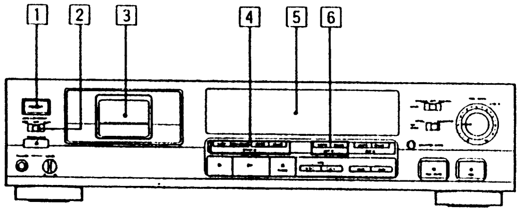
Visible cassette loading
You can view the tape operation through the lid of the cassette compartment. Due to a revolutionary new transport mechanism, cassette loading time has been significantly reduced.

Excellent sound quality
1-bit A/D converter
For the A/D converter section which converts analog input signals to digital signals, the unit employs a 1-bit A/D converter which theoretically generates no zero-cross distortion for a clear, elegant sound quality.
Pulse D/A converter
Superior playback performance is achieved with a pulse D/A converter.

Rich variety of subcode information
This unit can record subcode information such as Start IDs, program numbers, Skip IDs, and absolute time data, enabling you to quickly locate tunes and display the playback time in the same manner as when playing compact discs.

Post edit recording of sub codes
You can record or rewrite the following sub codes after the audio signal recording has been completed.
Start ID: Signifies the beginning of a selection.
Program number: Gives a number to the selection.
Skip ID: Signifies the beginning of a portion to be skipped.
End ID: Signifies the end position of recording/playback.
Since sub codes are written on the tape separately from audio signals, the audio signals are not affected.

A



Location and Function of Controls

Refer to the pages indicated in parenthesis for details.

Front Panel/Remote Commander A

1 POWER button
Turns the power on and off.

2 TIMER switch
Normally set to the OFF position. When recording or playing back at the desired time using a commercially available audio timer, set to the REC position or the PLAY position respectively. (51)

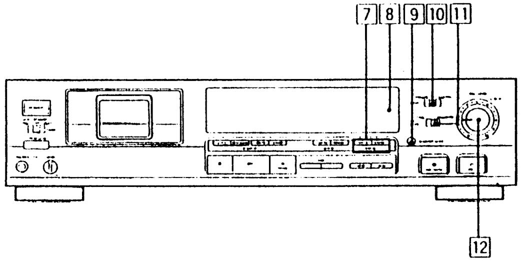
3 Cassette compartment
Insert a cassette with the window side up and the safety tab facing you. (18)

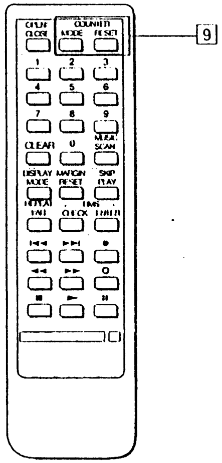
4 START ID buttons
AUTO: Press to turn on and off the AUTO indicator. When the AUTO indicator is lit, the start ID will automatically be written during recording. When the AUTO indicator is not lit, press the START ID WRITE button at the point where you want to write a start ID. (30)
WRITE: Press to write the start ID at the desired point during recording or playback. (31)
ERASE: Press to erase a start ID. When a start ID and a program number are written on the tape, both codes are simultaneously erased by pressing this button. (33)
RENUMBER: Press to renumber all programs on the tape. When only the start IDs are written, pressing this button will insert the proper program numbers beginning with "1". The tape will rewind and start from the beginning to accomplish this function. (36)

5 Display window

6 SKIP ID buttons
WRITE: Press at the beginning of the portion you may wish to skip later. A skip ID will be written from the point where you pressed this button. (38)
ERASE: Press to erase the nearest skip ID which is before the current position. (39)

A





Location and Function of Controls

7 END ID buttons
WRITE: Press to write the ID signifying the end of playback or recording. (40)
ERASE: Press to erase the end ID. (42)

8 Remote sensor
Receives the signal from the remote commander.

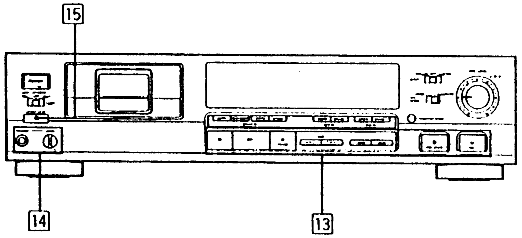
9 COUNTER MODE button
Selects the display mode among the absolute time, remaining time to the end of whole tape and linear counter (tape running time). Each time you press the button, the display changes sequentially. (44)
RESET button (only with the remote commander)
Resets the linear counter to "0M 00S". (44)

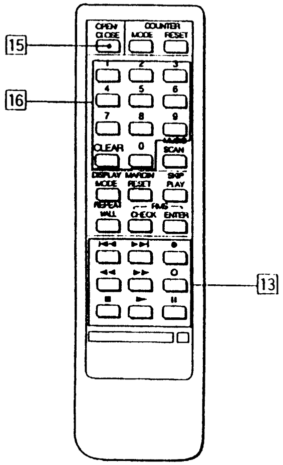
10 INPUT selector
Set according to the signal to be recorded (21)
ANALOG: For recording from the equipment connected to the LINE IN jacks.
OPT: For recording from the equipment connected to the DIGITAL IN (OPTICAL) jack.
COAXIAL: For recording from the equipment connected to the DIGITAL IN (COAXIAL) jack.

11 REC MODE selector
Normally set to the STANDARD position. When this selector is set to the LONG position, you can record analog input signals or digital signals with 32 kHz in the long-play mode. (21, 24)

12 REC LEVEL (recording level) controls
Adjust the recording levels and balance for the analog input signals.
The outer knob controls the L (left) channel level and the inner knob the R (right) channel level. The knobs can be adjusted together. To adjust each channel independently, turn the knob while holding the other knob.
When recording digital signals, it is not necessary to adjust the recording levels. (21, 23)

A





Location and Function of Controls

13 Tape operating buttons

■ (stop): Press to stop recording or playback.

► (play): Press to start palyback or recording.

❚❚PAUSE (pause): Press to stop for a moment during recording or playback. To restart recording or playback, press this button again or press the ► button.
If the unit is left in the pause mode for about 10 minutes, it will automatically be released and the deck will enter the stop mode. To restart recording or playback from the stop mode, press the ●REC or ► button respectively.

|◄◄/►►| (AMS): Press to locate the beginning of the selection during playback or in the stop mode.

◄◄/►► (rewind/review, fast-forward/cue): In the stop mode, press to rewind/fast-forward the tape.
During playback, press to rewind or fast-forward the tape while listening to the sound.

○REC MUTE (record muting): Inserts a sound-muted portion (space).

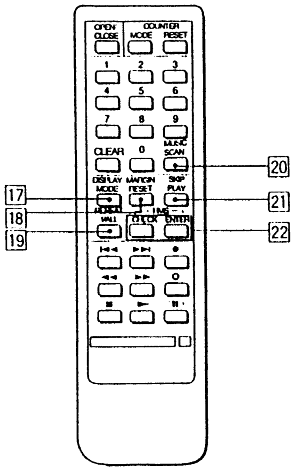
●REC (recording): Press to enter the record-pause mode. After pressing this button, press the ❚❚pause or ► button.

14 PHONES jack and LEVEL control
Insert the headphones plug to this jack and turn the control to adjust the headphones volume level. (43)

15 ⏏OPEN/CLOSE button
Press to open or close the cassette compartment. (18)
This button does not function during recording or in the record muting mode.

16 Numeric buttons (0-9) and CLEAR button
Designate the desired program number to be played back before starting playback. Designate the desired number in the record-pause mode, the program number is written consecutively from the designated number. (35)
Press the CLEAR button to cancel the program number which has been mistakenly entered.

A



Location and Function of Controls

17 DISPLAY MODE button
Changes the display mode. (10)

18 MARGIN RESET button
Press to reset the margin of peak level.
"- -" appears at the MARGIN display (23)

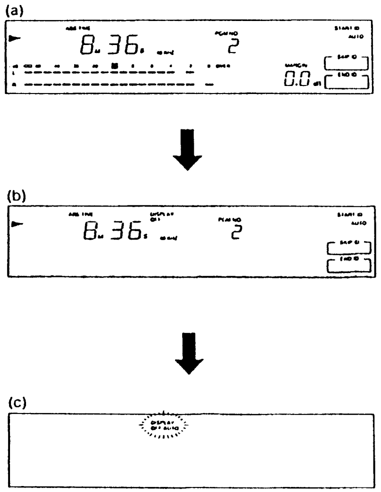
19 REPEAT 1/ALL button
Press to play a desired portion repeatedly. Each time you press the button, the indicatior changes as follows:
REPEAT 1 → REPEAT ALL → off (45)

20 MUSIC SCAN button
Press to listen to the beginning of each selection successively. (47)

21 SKIP PLAY button
Press to activate the skip ID code function. The portion of the tape previously marked will be skipped. (49)

22 RMS play buttons
ENTER: To program the selections in a desired order, press this button after pressing the numeric buttons. (50)
CHECK: Press to check the programmed contents. (50)

C



Location and Function of Controls

Display Window C

To turn off the display window
When the power is turned on, the display window also is turned on. During recording or playback, all display or some parts of the display can be turned off as follows:

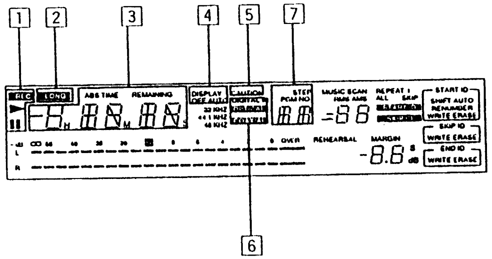
This operation can be performed only with the remote commander.
Each time you press the DISPLAY MODE button, the display changes as follows:

Normal indicators (a) ◄
↓
Peak level meters and margin indicators go off. (b)
(The DISPLAY OFF indicator lights.)
↓
All the indicators go off during recording or playback*. (c)
(The DISPLAY OFF AUTO indicator lights momentarily just before the indicators go off.)

* When pressing the DISPLAY MODE button except during recording or playback, the DISPLAY OFF AUTO indicator lights. In this case, all the indicators go off immediately after recording or playback starts.

To change the brightness of the display window
While pressing the COUNTER MODE button, press one of the numeric buttons 1, 2 and 3 on the remote commander. The greater number pressed, the darker the display window becomes.

D



Location and Function of Controls

Fig. D

[1] Tape operation indicators
REC : Lights during recording or in the record-pause mode. Flashes in the record muting mode.
►: Lights during recording or playback. It also lights in the record-pause, the play-pause mode or in the record muting mode.
II: Lights in the record-pause mode or in the play-pause mode.

[2] LONG play mode indicator
Lights when recording or playback is being performed in the long play mode.

[3] Time indicator
Indicates the tape running time, absolute time or remaining time. Each time you press the COUNTER MODE button, the display is changed.
When only the time display appears:
Shows the tape running time.
When the REMAINING (remaining time) indicator appears: Shows the remaining time of the tape.
When the ABS TIME (absolute time) indicator appears: Shows the elapsed time from the beginning of the tape.

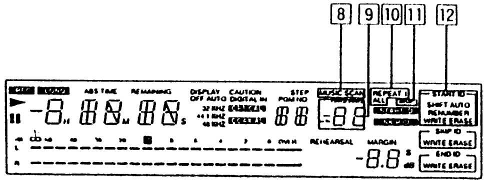
[4] DISPLAY OFF/AUTO indicators
The DISPLAY OFF indicator lights when peak level meters and margin indicators are turned off. The DISPLAY OFF AUTO indicator lights momentarily before all the indicators are turned off.

[5] CAUTION indicator
Lights when moisture condensation occurs. If this happens, the deck stops functioning automatically. (4)

[6] INPUT selector indicators
The DIGITAL IN OPTICAL or DIGITAL IN COAXIAL indicator lights according to the position of the INPUT selector. No indicator lights when the INPUT selector is set to the ANALOG position.

[7] STEP/PGM NO. indicator
Shows the program number of the selection being played. When programming the desired selection with the RMS operation (50), the display shows the step number of the programmed selection.

D



[8] MUSIC SCAN indicator
Lights after you press the MUSIC SCAN button to listen to the beginning of each selection successively.

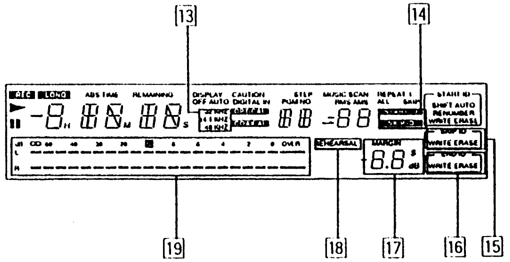
[9] RMS (Random Music Sensor)/AMS (Automatic Music Sensor) indicators
Show the number of selections to be skipped ahead or behind in the AMS operation. When designating a selection directly by the numeric button and the ► button, the display shows the program number of the target selection while the selection is being searched for. When programming the desired selections in the RMS operation (50), the display shows the program number of the selection to be programmed.

[10] REPEAT indicators
REPEAT 1: Lights when a desired selection is played back repeatedly.
REPEAT ALL: Lights when all the selections are played back repeatedly.

[11] SKIP indicator
When this indicator is lit during playback, the portion marked by the skip ID is skipped and playback continues from the next start ID.

[12] START ID mode indicators
AUTO: Lights when the AUTO button is pressed to write the start ID automatically.
WRITE: Lights when writing the start ID manually.
ERASE: Lights when erasing the start ID.
AUTO RENUMBER: Lights when renumbering program numbers automatically.
SHIFT RENUMBER: Lights when shifting the start ID and program number position.

D



[13] Sampling frequency indicator
48 kHz: Lights when recording or playing back analog input signals (standard mode).
44.1 kHz: Lights when recording or playing back a CD or a pre-recorded DAT cassette tape.
32 kHz: Lights when recording or playing back analog input signals (long-play mode).

[14] START ID indicator
Flashes when writing (for 9 or 18 seconds) or erasing a start ID code, and lights when the start ID is detected during playback.
SKIP ID indicator
Lights when writing (for 1 or 2 seconds) or erasing a skip ID code or when the skip ID is detected during playback.

[15] SKIP ID mode indicator
WRITE: Lights when writing the skip ID.
ERASE: Lights when erasing the skip ID.

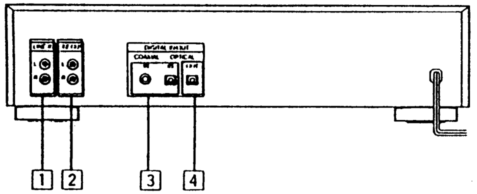
[16] END ID mode indicator
WRITE: Lights when writing the end ID.
ERASE: Lights when erasing the end ID.

[17] MARGIN indicator
Shows how much margin there is between the peak level of input audio signal and 0 dB.

[18] REHEARSAL indicator
Lights while the rehearsal function is activated (32).

[19] Peak level meters
Indicate the signal levels during playback and recording. There are separate meters for each left and right channel. These meters have a peak hold function which indicates the peak level momentarily.

E



Location and Function of Controls

Rear Panel Jacks E

[1] LINE IN (line input) jacks (phono jack)
Connect to the recording outputs of an amplifier. Signals supplied by the amplifier can be recorded using the sampling frequency of 48 kHz in the standard play mode or 32 kHz in the long play mode.

[2] LINE OUT (line output) jacks (phono jack)
Connect to the DAT or tape inputs of an amplifier. The playback signal of this deck will be output.

[3] COAXIAL/OPTICAL DIGITAL IN (digital input) jacks (coaxial phono jack/optical jack)
Connect to the digital outputs of an amplifier having a built-in D/A converter or other digital source, such as a CD player for digital-to-digital recording.

[4] OPTICAL DIGITAL OUT (digital output) jack (optical jack)
Connect to the digital inputs of an amplifier having a built-in D/A converter or another DAT deck, for playback of a DAT cassette or digital-to-digital recording.

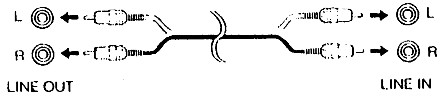
Notes on connection

- Use the connecting cords specified in the illustrations.
- Turn off the power for all equipments before making connections.
- Be sure to insert the plugs firmly into the jacks. Loose connections may cause hum and noise. When unplugging, grasp the plug and not the cord.

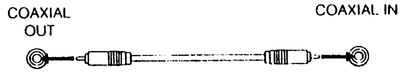
Note on sound signals

When connecting an optical cable to the DIGITAL IN/DIGITAL OUT jacks, sound signals (L/R) are transmitted together through the cable.

A



B



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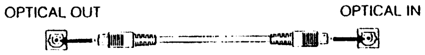

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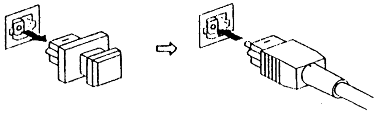


Connections

Connecting Cords

There are following three types of connecting jacks at the rear of the deck Each type of jack requires a different type of connecting cord.

For LINE IN/OUT (analog input/output) jacks A

Use the supplied or an optional audio signal connecting cord such as RK-C710HS, RK-C715HS, RK-C910ES, RK-C915ES etc.

Note
Red plugs and jacks are for the right channel (R) and white ones for the left channel (L).

For COAXIAL IN (digital input) jacks B

Use an optional coaxial connecting cord such as VMC-1ES, VMC-10ES etc

For OPTICAL IN/OUT (optical transmission digital input/output) jacks C

Use an optional optical cable such as POC-15, POC-10HS etc.

How to connect the optical cable D

Remove the cap and plug it in firmly.

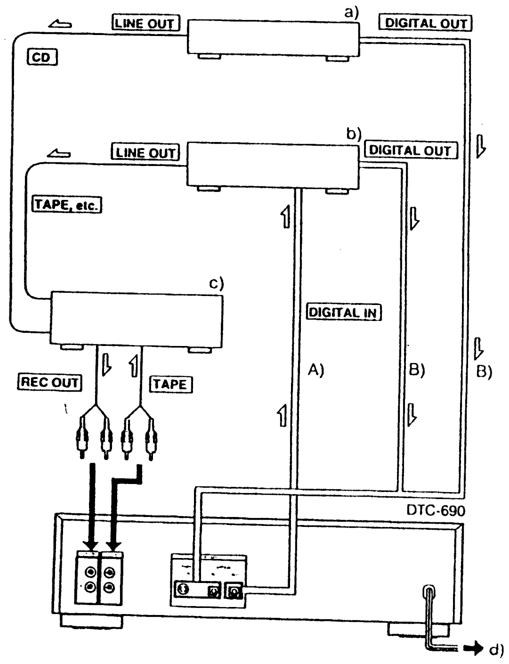
Notes on the optical cable

- Do not bend the cord When the cord is not used, curl it
  with a diameter of more than 15 cm (5 $^7/_8$ inches).
- Do not use it under high temperatures
- When the optical cable is not connected, cover the OPTICAL IN/OUT jacks with the supplied caps.

——— : Analog signal

═══ : Digital signal (coaxial cable or optical cable)

▭▷ : Signal flow


LINE OUT
a)
DIGITAL OUT
CD
LINE OUT
b)
DIGITAL OUT
TAPE, etc.
c)
DIGITAL IN
A)
B)
B)
REC OUT
TAPE
DTC-690
d)

Connection Examples

If your amplifier is not equipped with digital signal jacks

a) CD player
b) DAT deck
c) Amplifier
d) to a wall outlet

A) When recording via digital-to-digital connection, connect a DAT deck (the digital input) to DIGITAL OUT OPTICAL of the DTC-690.

B) When recording via digital-to-digital connection, connect the sound source equipment (the digital output) to DIGITAL IN (COAXIAL or OPTICAL) of the DTC-690.

When connecting a microphone

Connecting a stereo microphone amplifier (the analog output) to LINE IN of the DTC-690.

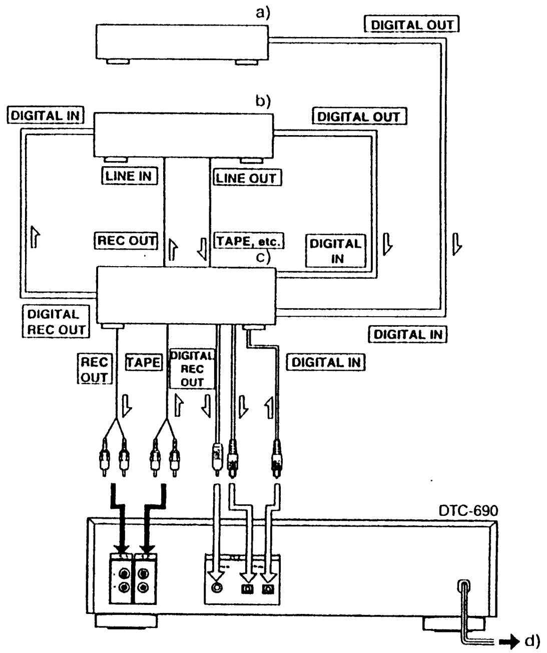
Note

If "PROH" appears on the display, recording via digital-to-digital connection cannot be performed.
In this case, connect the sound source equipment using LINE IN and OUT jacks.

——— : Analog signal

═══ : Digital signal (coaxial cable or optical cable)

▭▷ : Signal flow


a)
DIGITAL OUT
DIGITAL IN
b)
DIGITAL OUT
LINE IN
LINE OUT
REC OUT
TAPE, etc.
c)
DIGITAL IN
DIGITAL REC OUT
DIGITAL IN
REC OUT
TAPE
DIGITAL REC OUT
DIGITAL IN
DTC-690
d)

If your amplifier is equipped with digital signal jacks

a) CD player
b) DAT deck
c) Amplifier
d) to a wall outlet

Note

If "PROH" appears on the display, recording via digital-to-digital connection cannot be performed.
In this case, connect the sound source equipment using LINE IN and OUT jacks.

SECTION 2

DISASSEMBLY

- **Remove the following devices shown by ❶, etc. In the order of the numbers.**

[CASE]

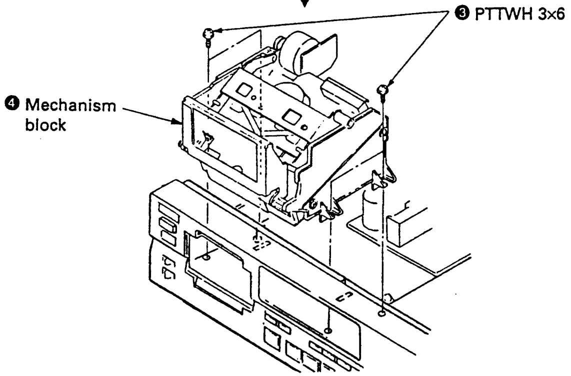
Unscrew the four case attachment screws and remove the case.

[CASSETTE WINDOW]

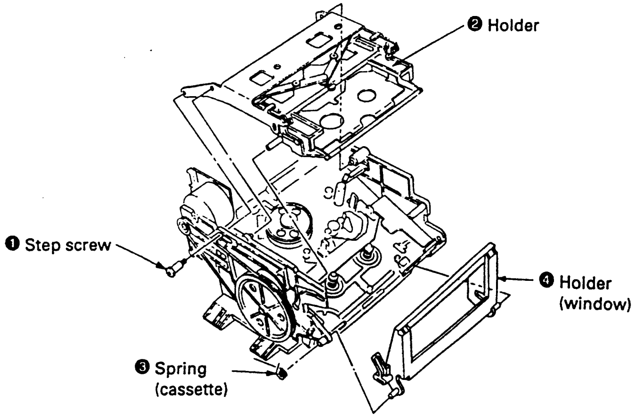
❶ Press the OPEN/CLOSE switch to effect LOADING OUT STATE (if power is not supplied) rotate the pulley in the left side of the Mechanism Deck counterclockwise.)

❷ Remove the cassette by lifting the window up.

MECHANISM SECTION

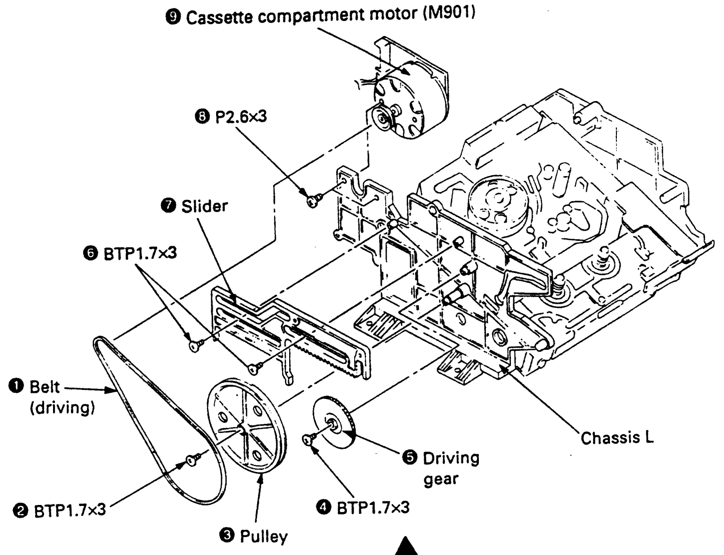

❸ PTTWH 3×6
❹ Mechanism block

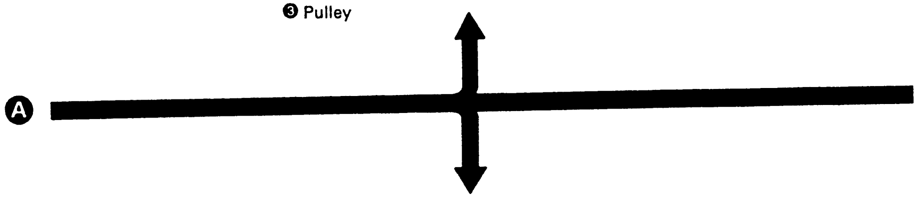
HOLDER


❷ Holder
❶ Step screw
❹ Holder (window)
❸ Spring (cassette)

➡ Ⓐ

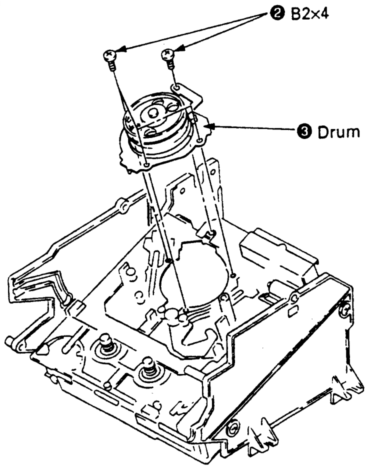
CASSETTE COMPARTMENT MOTOR (M901), PULLEY, GEAR (CAM) AND SLIDER


❾ Cassette compartment motor (M901)
❽ P2.6×3
❼ Slider
❻ BTP1.7×3
❶ Belt (driving)
❷ BTP1.7×3
❸ Pulley
❹ BTP1.7×3
❺ Driving gear
Chassis L



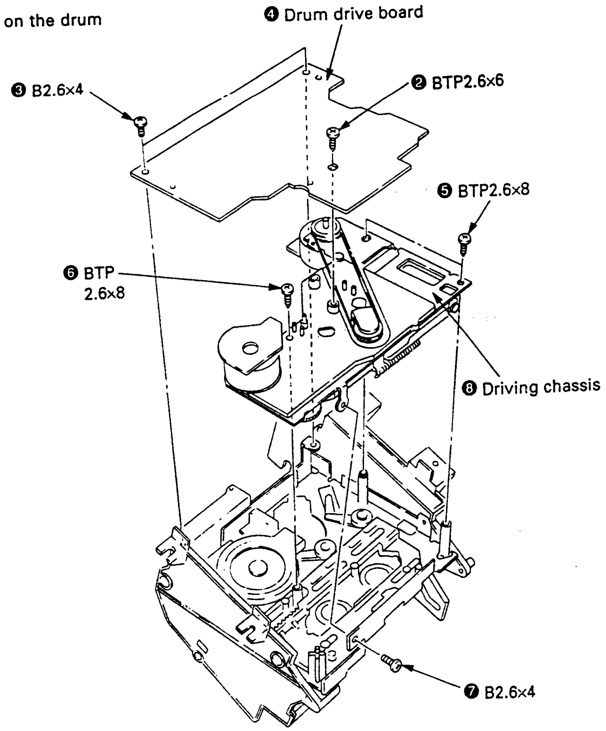
DRUM

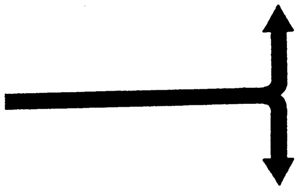
❶ Remove the drum lead wires from connectors.



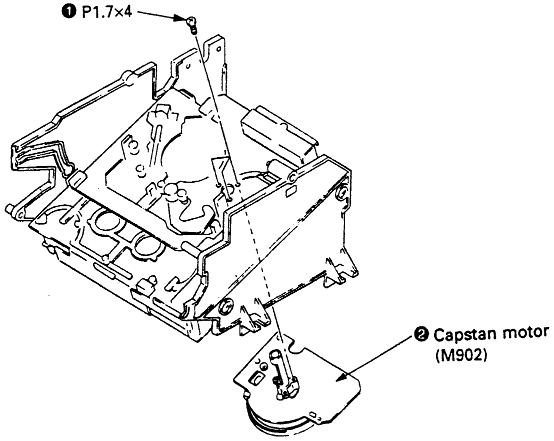
DRUM DRIVE BOARD, DRIVING CHASSIS

❶ Remove the lead wires from connectors on the drum drive board.


❹ Drum drive board
❸ B2.6×4
❷ BTP2.6×6
❺ BTP2.6×8
❻ BTP 2.6×8
❽ Driving chassis
❼ B2.6×4



CAPSTAN MOTOR (M902)


❶ P1.7×4
❷ Capstan motor (M902)

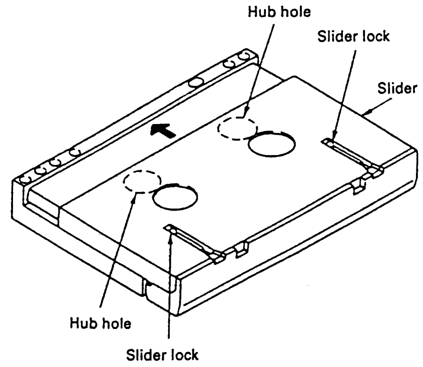
SECTION 3

ADJUSTMENTS

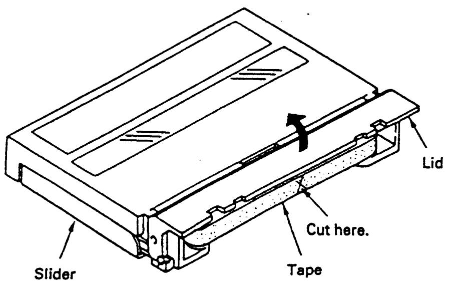
Notes When Making Adjustments

1. Adjustments should be performed in the order listed.
2. Use the following test tapes :
   TY-7111 (8-909-812-00) .... Level
   TY-7252 (8-909-822-00) .... Tracking
   TY-7551 (8-909-814-00) .... Functions
   TY-30B (8-892-358-00) .... Blank

   Use the following torque meter:
   TW-7131 (8-909-708-71) .... FWD
3. Switches and controls should be set as follows unless otherwise specified.
   TIMER switch : OFF
   REC MODE switch : LONG
   INPUT switch : COAXIAL
   REC LEVEL control : Min.
   PHONES LEVEL control : Min.
4. Creating an end sensor cassette
   (1) Press the tape slider lock and move the slider in the direction indicated by the arrow.

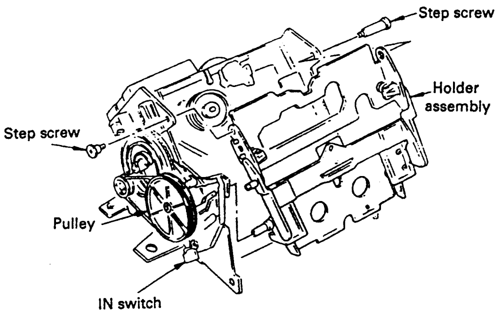

Hub hole
Slider lock
Slider
Hub hole
Slider lock

   (2) Open the lid and cut the tape.


Lid
Cut here.
Slider
Tape

   (3) Turn the hubs until the tape is completely inside the cassette (both T and S sides).
   The end sensor cassette for end sensor adjustment is now ready for use.

5. Cleaning of the Revolving Drum
   (1) Fold a chamois (2-034-697-00) or a knit cloth into 4 or more files, slightly impregnate it with a cleaning liquid (9-919-573-00), and softly touch the drum with it and manually rotate the drum slowly counterclockwise by 2 to 3 turns for cleaning.
   (2) At that time, be careful not to move the chamois vertically to the head tip. Otherwise, the head tip may probably be damaged.
6. Be careful not to move RV1 and RV2 on the RF AMP board in the mechanism assembly.
7. To adjust the tape path and guides, remove the holder assembly as shown in the diagram and use the DAT holder jig (J-8000-002-A). This will make it easier to perform adjustments.
   - First turning the pulley counterclockwise to put it in loading out status will make removal and reattachment of the holder assembly easier.
   - To perform adjustments, turn the pulley clockwise to put it in loading in status, load the cassette tape and set the IN switch to the ON position.


Step screw
Holder assembly
Step screw
Pulley
IN switch

8. Test mode
   The test mode is effected by shorting TP (XTEST MAIN, XTEST SERVO and XTEST DISP) on the main board and the control switch board and GND.
   (1) Test mode (main • servo)
   Turn OFF the power switch, connect XTEST MAIN and XTEST SERVO on the main board to GND and perform the following adjustments.
   - Tape path fine adjustment
   - DPG adjustment
   - ATF pilot (GCA) checking
   - End sensor checking
   - FWD torque checking
   - FWD back tension checking and adjustment

   (2) Test mode (display)
   You can check the following FL display tube and the panel switch by turning OFF the power switch, disconnecting CN932 on the MAIN board, connecting XTEST DISP to GND, connecting CN932 again and then turning ON the power switch.

Each grid of the FL display tube sequentially lights up while all tubes being lighted up finally.

⇓

Level meters go out one after one.

⇓

Press any of the remote controller for DAT in this state. Thus, all level meters go out. (It may sometimes occur that one or two meters remain lighting up according to switch setting at that time.)

⇓

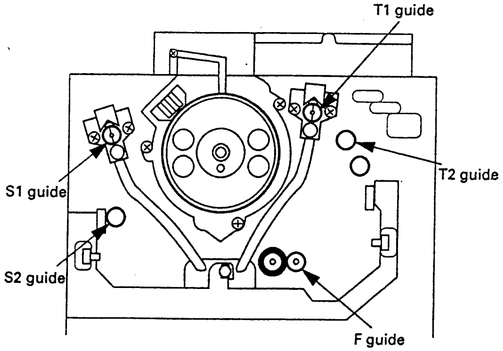
Everytime a switch on the panel is pressed, display tubes light up sequentially one after one. With all keys once pressed, all level meters go out.

- To reset the test mode, disconnect the wire shorting XTEST and GND. After completion of adjusting, be sure to reset the test mode.

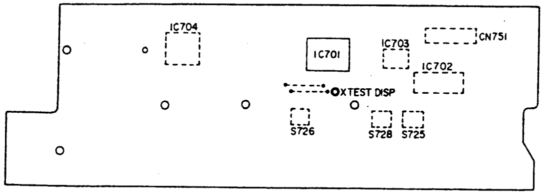
9. Check the following items for correct tape speed, after completion of adjusting.
   (1) Set the REC MODE switch to STANDARD and check for normal recording and playback. (× 1)
   (2) Set the REC MODE switch to LONG and check for normal recording and playback. (× 0.5)
   (3) With QUE (▶ + ▶▶) or REVIEW (▶ + ◀◀), check that qurrr, qurrr sound is heard. (× 3, × 8)
   (4) Check that correct time is displayed after FF (▶▶) or REV (◀◀). (× 16)
   (5) Check that SEARCH (▷▷|, |◁◁) is normal.

Adjust Parts Location

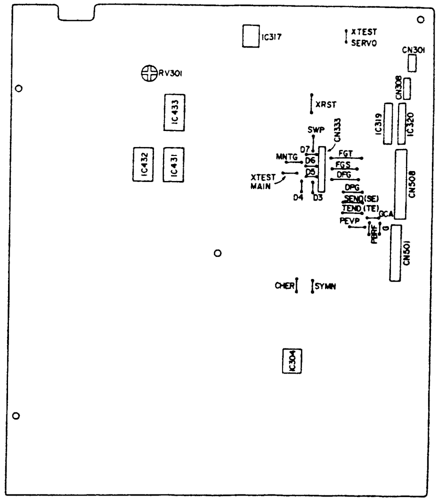
— Mechanism assembly —


T1 guide
T2 guide
S1 guide
S2 guide
F guide

— Control sw board —


IC704
IC701
IC703
CN751
IC702
XTEST DISP
S726
S728
S725

— Main board —
(Component side)


IC317
XTEST SERVO
CN301
RV301
CN308
XRST
IC433
IC319
IC320
SWP
CN333
D7
MNTG
D6
FGT
FGS
IC432
IC431
D5
DFG
XTEST MAIN
D4
D3
DPG
SEND(SE)
TEND(TE)
GCA
PEVP
PBRF
G
CN508
CN501
CHER
SYMN
IC304

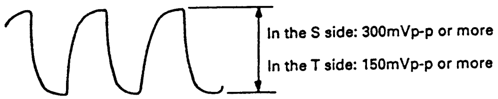
3-1. ELECTRICAL ADJUSTMENTS

End Sensor Check

Perform the following adjustment when the holder has been removed or part of the mechanism deck section replaced.

Check Procedure:

1. Connect an oscilloscope to the test land SE (in the S side) and TE (in the T side) of the main board.
2. Actuate the test mode (main • servo), mount an end sensor cassette and effect the STOP (■) mode.
3. Check that p-p values of waveform of the oscilloscope satisfy the following.


In the S side: 300mVp-p or more
In the T side: 150mVp-p or more

FWD Torque Check

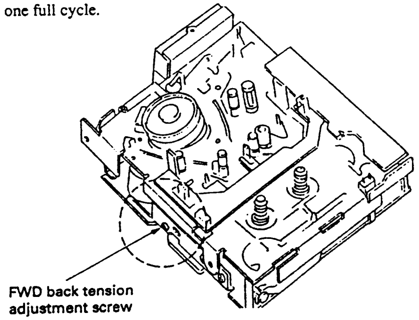
Check Procedure:

1. Put the set into the test mode (main • servo) and load the FWD torque meter TW-7131 (8-909-708-71).
2. Put the set into the PLAY (▶) mode.
3. Adjust RV301 so that the minimum value of FWD take up torque (take-up side rewinding torque) is between 10 – 11g·cm (0.14 – 0.15 oz·inch).
   Also, make sure that the maximum reading does not exceed 16g·cm (does not exceed 0.22oz·inch).
4. Confirm that the value indicated by the torque meter is maintained for one full cycle.

FWD Back Tension Check and Adjustment

Check procedure:

1. Put the set into the test mode (main • servo) and load the FWD torque meter TW-7131 (8-909-708-71)
2. Put the set into the PLAY (▶) mode.
3. Turn the FWD back tension adjustment screw locked on the mechanical deck side so that the minimum value of FWD back tension torque (supply side) is between 4 – 5g·cm (0.06 – 0.07oz·inch).
   Also, make sure that the maximum reading does not exceed 8g·cm (does not exceed 0.11oz·inch).
   After completion of adjusting, be sure to apply screw lock.
4. Confirm that value indicated by the torque meter is maintained for one full cycle.



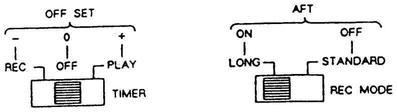
To tighten (clockwise) — back tension becomes larger.
To loosen (counterclockwise) — back tension becomes smaller.

Tape Path Fine Adjustments (× 1.5 FWD Mode)

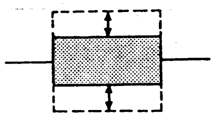
Perform the following adjustment when the drum has been replaced.

Adjustment Procedure :

1. Connect an oscilloscope CH-1 to TP (PBRF) and CH-2 to TP (SWP) on the main board.
2. Put the set into the test mode (main • servo) and load test tape TY-7252 (8-909-822-00).
3. Press the AMS (⊳⊳I) key.
   Each part of switches on Test Mode.

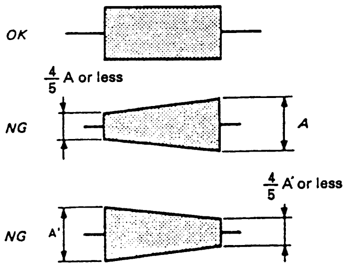


4. With the REC MODE switch set to STANDARD (ATF: OFF) and the TIMER switch set to PLAY or REC (OFFSET: + or –), fine adjust the S1 and T1 guides so that the oscilloscope RF signal waveform remains the same when high-low is repeated.



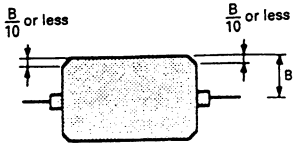
* Finish the adjustment by screwing in.

5. Check the RF signal waveform with the REC MODE switch set to LONG (ATF: ON) and the TIMER switch set to PLAY or REC (OFFSET: + or –).



6. Check the RF signal waveform with the REC MODE switch set to LONG (ATF: ON) and the TIMER switch set to PLAY or REC (OFFSET: 0).
   (1) Confirm theat the RF signal waveform peak value (B) is 60 mV or more.

(2) Confirm that the undershoot level of the RF signal waveform's flat portion is within 10%.



7. When the measured values are not within the above toleranc repeat items 3 – 6 above.

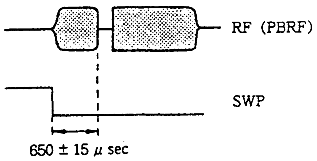
Adjustment Point: mechanism assembly

DPG Adjustment

Perform the following adjustment without fail when the drum has been replaced.

Adjustment Procedure:

1. Connect oscilloscope CH-1 to TP (PBRF) and CH-2 to TP (SWP) on the main board. (Use CH-2 as the trigger. When the CH-2 signal is inverted, the trailing edge can be used for synchronization.)
2. Put the set into the test mode (main • servo) and load test tape TY-7252 (8-909-822-00).
3. Set the REC MODE switch to LONG (ATF: ON) and the TIMER switch to OFF (OFFSET: 0).
4. Press the AMS (⊳⊳I) key.
5. Press the ◀◀ and ▶▶ keys as appropriate so that the gap between the oscilloscope SWP and RF signals becomes 650 ± 15 µsec. (Hold the ◀◀ and ▶▶ keys down for more than 1 second to perform rough adjustment. Hold them down for approximately 0.2 seconds for fine adjustment.)

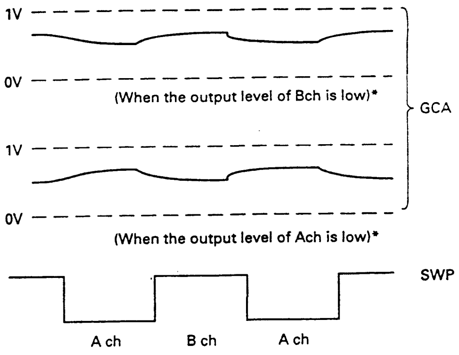


ATF Pilot (GCA) Check

Perform this adjustment after cleaning the heads with a cleaning cassette.

Check Procedure:

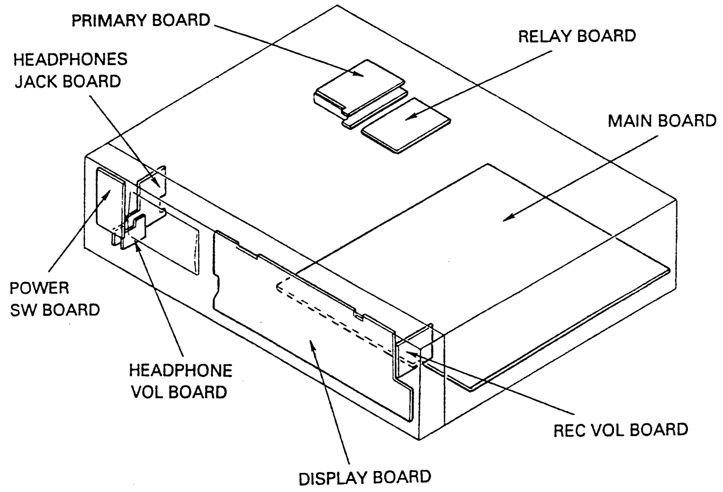
1. Connect oscilloscope CH-1 to TP (GCA: Gain Control Amp.) and CH-2 to TP (SWP) on the main board. (When the CH-2 signal is inverted, the trailing edge can be used for synchronization.)
2. Put the set into the test mode (main • servo) and load test tape TY-7111 (8-909-812-00).
3. Actuate the PLAY (▶) mode and check that the GCA waveform on the oscilloscope is as follows.

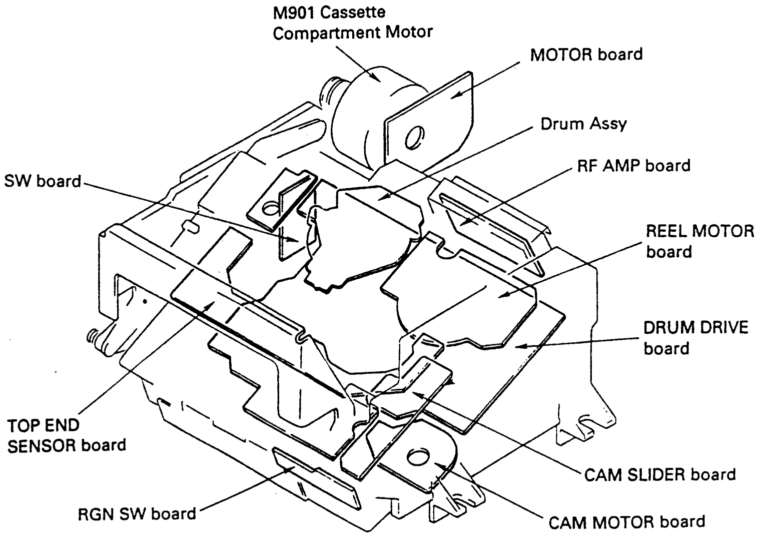

1V
0V
(When the output level of Bch is low)*
GCA
1V
0V
(When the output level of Ach is low)*
SWP
A ch
B ch
A ch

* Slightly changes depending on the state of the head. NG if the GCA waveform is 1V or more or equal to the GND level.

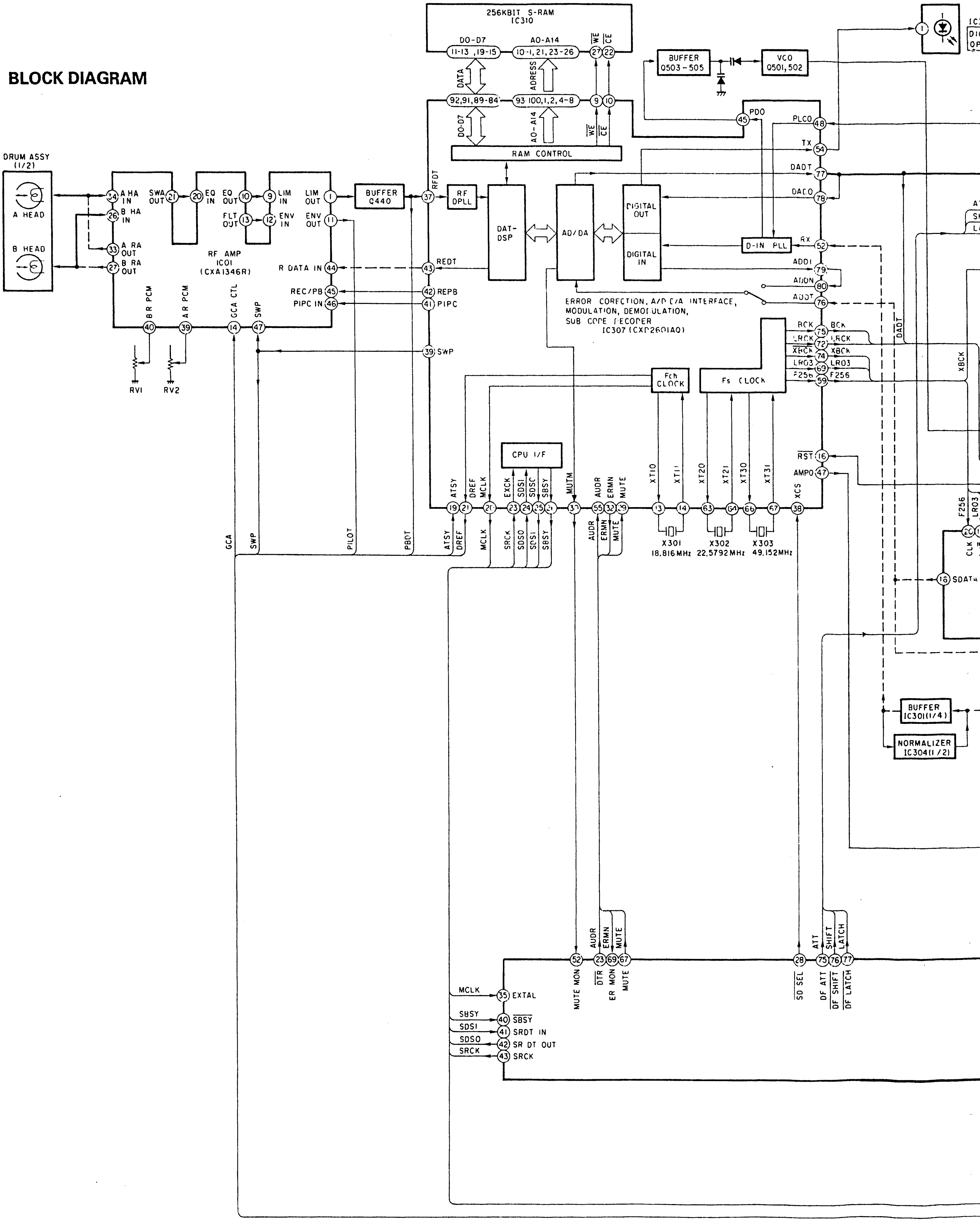
SECTION 4
DIAGRAMS

4-1. CIRCUIT BOARDS LOCATION

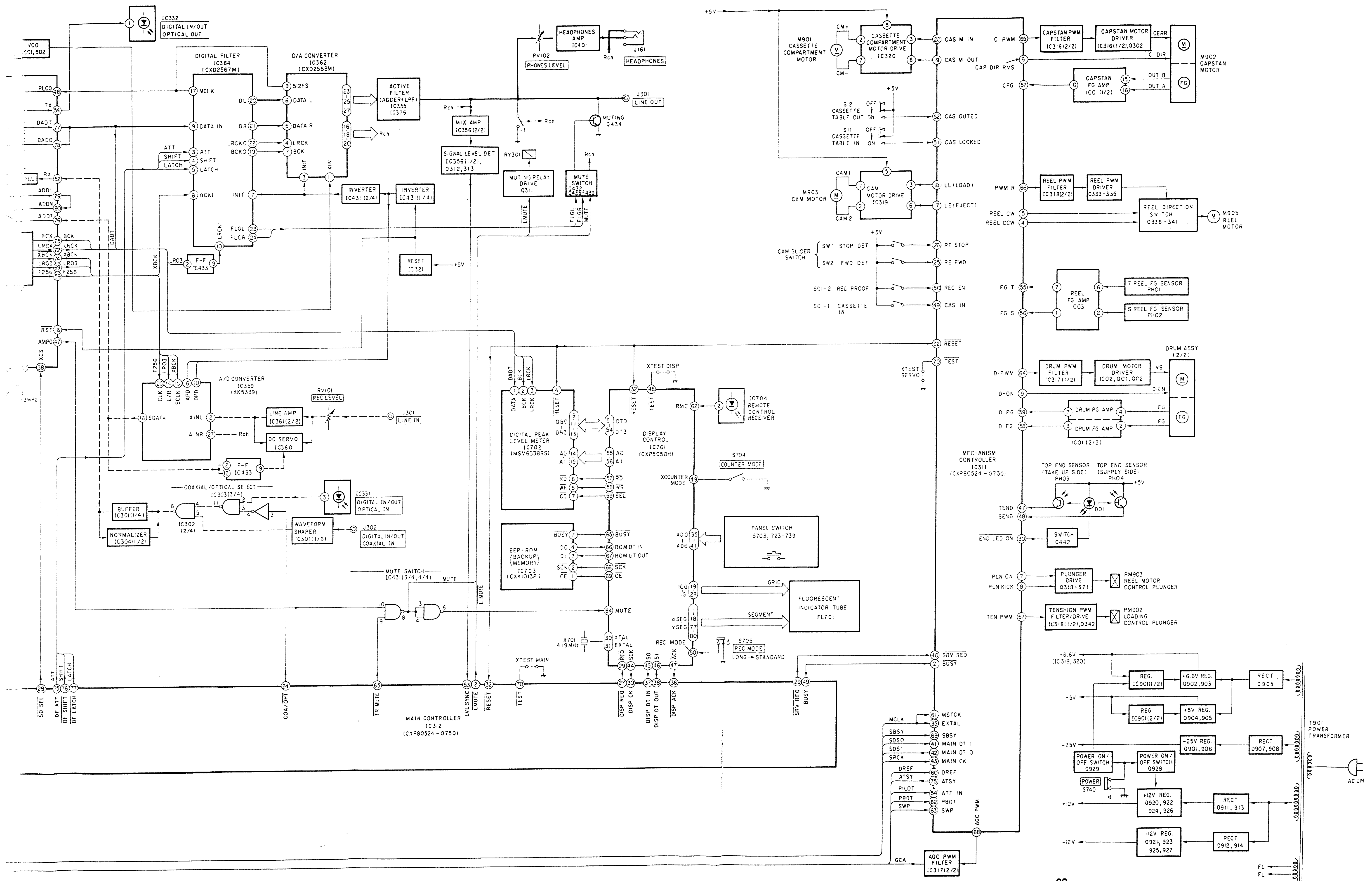

PRIMARY BOARD
RELAY BOARD
HEADPHONES JACK BOARD
MAIN BOARD
POWER SW BOARD
HEADPHONE VOL BOARD
REC VOL BOARD
DISPLAY BOARD


M901 Cassette Compartment Motor
MOTOR board
Drum Assy
RF AMP board
SW board
REEL MOTOR board
DRUM DRIVE board
TOP END SENSOR board
CAM SLIDER board
RGN SW board
CAM MOTOR board

2. BLOCK DIAGRAM



256KBIT S-RAM
IC310
D0-D7
11-13 ,19-15
A0-A14
10-1, 21, 23-26
WE
CE
27
22
DATA
ADRESS
92,91,89-84
93 100,1,2,4-8
9
10
D0-D7
A0-A14
WE
CE
RAM CONTROL
BUFFER
Q503-505
VCO
Q501,502
PDO
45
PLCO
48
TX
54
DADT
77
DACO
78
DRUM ASSY
(1/2)
A HEAD
B HEAD
34 A HA IN
26 B HA IN
33 A RA OUT
27 B RA OUT
SWA OUT 21
20 EQ IN
EQ OUT 10
FLT OUT 13
9 LIM IN
12 ENV IN
LIM OUT 1
ENV OUT 11
RF AMP
IC01
(CXA1346R)
R DATA IN 44
REC/PB 45
PIPC IN 46
B R PCM 40
A R PCM 39
GCA CTL 14
SWP 47
RV1
RV2
BUFFER
Q440
RFDT
37
RF DPLL
DAT-DSP
AD/DA
DIGITAL OUT
DIGITAL IN
D-IN PLL
RX 52
ADDI 79
ADON 80
ADOT 76
43 REDT
42 REPB
41 PIPC
39 SWP
ERROR CORRECTION, A/D D/A INTERFACE,
MODULATION, DEMODULATION,
SUB CODE DECODER
IC307 (CXD2601AQ)
BCK 75 BCK
LRCK 72 LRCK
XBCK 74 XBCK
LR03 69 LR03
F256 59 F256
Fch CLOCK
Fs CLOCK
CPU I/F
RST 16
AMPO 47
ATSY 19
DREF 21
MCLK 20
EXCK 23
SDSI 24
SDSO 25
SBSY 26
MUTM 37
AUDR 55
ERMN 32
MUTE 29
XT10 13
XT11 14
XT20 63
XT21 64
XT30 66
XT31 67
XCS 38
X301
18.816MHz
X302
22.5792MHz
X303
49.152MHz
GCA
SWP
PILOT
PBDT
ATSY
DREF
MCLK
SRCK
SDSO
SDSI
SBSY
AUDR
ERMN
MUTE
DADT
XBCK
F256
LR03
CLK
16 SDATA
BUFFER
IC301(1/4)
NORMALIZER
IC304(1/2)
52 MUTE MON
23 DTR
69 ER MON
67 MUTE
28 SD SEL
ATT
SHIFT
LATCH
75 DF ATT
76 DF SHIFT
77 DF LATCH
MCLK 35 EXTAL
SBSY 40 SBSY
SDSI 41 SRDT IN
SDSO 42 SR DT OUT
SRCK 43 SRCK
IC
DI
OP


VCO
IC301,502
PLCO
TX
DADT
DACO
RX
ADDI
ADDN
ADDT
RCK
LRCK
XBCK
LRO3
F256
RST
AMPO
XCS
IC332
DIGITAL IN/OUT
OPTICAL OUT
DIGITAL FILTER
IC364
(CXD2567M)
MCLK
DATA IN
ATT
SHIFT
LATCH
BCKI
LRCKI
DL
DR
LRCKO
BCKO
INIT
FLGL
FLGR
F-F
IC433
D/A CONVERTER
IC362
(CXD2568M)
512FS
DATA L
DATA R
LRCK
BCK
XIN
ACTIVE
FILTER
(ADDER+LPF)
IC355
IC376
Rch
MIX AMP
IC356(2/2)
SIGNAL LEVEL DET
IC356(1/2),
Q312,313
INVERTER
IC431(2/4)
INVERTER
IC431(1/4)
RESET
IC321
+5V
HEADPHONES
AMP
IC401
J161
HEADPHONES
RV102
PHONES LEVEL
J301
LINE OUT
MUTING
Q434
RY301
MUTING RELAY
DRIVE
Q311
MUTE
SWITCH
Q432,435-439
LMUTE
DADT
XBCK
A/D CONVERTER
IC359
(AK5339)
CLK
L/R
SCLK
DPD
SDATA
AINL
AINR
LINE AMP
IC361(2/2)
DC SERVO
IC360
RV101
REC LEVEL
J301
LINE IN
COAXIAL/OPTICAL SELECT
IC303(3/4)
IC331
DIGITAL IN/OUT
OPTICAL IN
BUFFER
IC301(1/4)
NORMALIZER
IC304(1/2)
IC302
(2/4)
WAVEFORM
SHAPER
IC301(1/6)
J302
DIGITAL IN/OUT
COAXIAL IN
MUTE SWITCH
IC431(3/4,4/4)
MUTE
L MUTE
DATA
BCK
LRCK
RESET
DIGITAL PEAK
LEVEL METER
IC702
(MSM6338RS)
DB0
DB3
A0
A1
RD
WR
CE
EEP-ROM
(BACKUP)
(MEMORY)
IC703
(CXK1013P)
BUSY
DO
DI
SCK
XTEST DISP
DISPLAY
CONTROL
IC701
(CXP5058H)
DT0
DT3
SEL
ROM DT IN
ROM DT OUT
RMC
IC704
REMOTE
CONTROL
RECEIVER
S704
COUNTER MODE
XCOUNTER
MODE
PANEL SWITCH
S703, 723-739
AD0
AD6
IG0
IG
GRID
SEGMENT
aSEG
vSEG
FLUORESCENT
INDICATOR TUBE
FL701
X701
4.19MHz
XTAL
EXTAL
REC MODE
S705
REC MODE
LONG → STANDARD
XTEST MAIN
SD SEL
DF ATT
DF SHIFT
DF LATCH
COA/OPT
TR MUTE
LVL SYNC
LMUTE
TEST
DISP REQ
DISP CK
DISP DT IN
DISP DT OUT
DISP ACK
SRV REQ
BUSY
MAIN CONTROLLER
IC312
(CXP80524-0750)
+5V
M901
CASSETTE
COMPARTMENT
MOTOR
CM+
CM−
CASSETTE
COMPARTMENT
MOTOR DRIVE
IC320
CAS M IN
CAS M OUT
S12
CASSETTE
TABLE OUT
S11
CASSETTE
TABLE IN
OFF
ON
CAS OUTED
CAS LOCKED
M903
CAM MOTOR
CAM1
CAM2
CAM
MOTOR DRIVE
IC319
LL (LOAD)
LE (EJECT)
CAM SLIDER
SWITCH
SW1 STOP DET
SW2 FWD DET
RE STOP
RE FWD
S01-2 REC PROOF
S0-1 CASSETTE IN
REC EN
CAS IN
RESET
XTEST
SERVO
TEST
C PWM
CAP DIR RVS
CFG
CAPSTAN PWM
FILTER
IC316(2/2)
CAPSTAN MOTOR
DRIVER
IC316(1/2),Q302
CERR
C DIR
CAPSTAN
FG AMP
IC01(1/2)
OUT B
OUT A
M902
CAPSTAN
MOTOR
FG
PWM R
REEL CW
REEL CCW
REEL PWM
FILTER
IC318(2/2)
REEL PWM
DRIVER
Q333-335
REEL DIRECTION
SWITCH
Q336-341
M905
REEL
MOTOR
FG T
FG S
REEL
FG AMP
IC03
T REEL FG SENSOR
PH01
S REEL FG SENSOR
PH02
DRUM ASSY
(2/2)
D-PWM
D-ON
D PG
D FG
DRUM PWM
FILTER
IC317(1/2)
DRUM MOTOR
DRIVER
IC02,Q01,Q02
VS
DRUM PG AMP
DRUM FG AMP
IC01(2/2)
PG
MECHANISM
CONTROLLER
IC311
(CXP80524-0730)
TOP END SENSOR
(TAKE UP SIDE)
PH03
TOP END SENSOR
(SUPPLY SIDE)
PH04
D01
TEND
SEND
END LED ON
SWITCH
Q442
PLN ON
PLN KICK
PLUNGER
DRIVE
Q319-321
PM903
REEL MOTOR
CONTROL PLUNGER
TEN PWM
TENSHION PWM
FILTER/DRIVE
IC318(1/2),Q342
PM902
LOADING
CONTROL PLUNGER
SRV REQ
BUSY
MCLK
SBSY
SDSO
SDSI
SRCK
DREF
ATSY
PILOT
PBDT
SWP
MSTCK
EXTAL
MAIN DT I
MAIN DT O
MAIN CK
ATF IN
AGC PWM
GCA
AGC PWM
FILTER
IC317(2/2)
+6.6V
(IC319,320)
REG.
IC901(1/2)
+6.6V REG.
Q902,903
RECT
D905
+5V
REG.
IC901(2/2)
+5V REG.
Q904,905
−25V
−25V REG.
Q901,906
RECT
D907,908
POWER ON/
OFF SWITCH
Q929
POWER ON/
OFF SWITCH
Q928
POWER
S740
+12V
+12V REG.
Q920,922
924,926
RECT
D911,913
−12V
−12V REG.
Q921,923
925,927
RECT
D912,914
T901
POWER
TRANSFORMER
AC IN
FL

4-5. PRINTED WIRING BOARDS

- MD/POWER SUPPLY/DISPLAY SECTION -

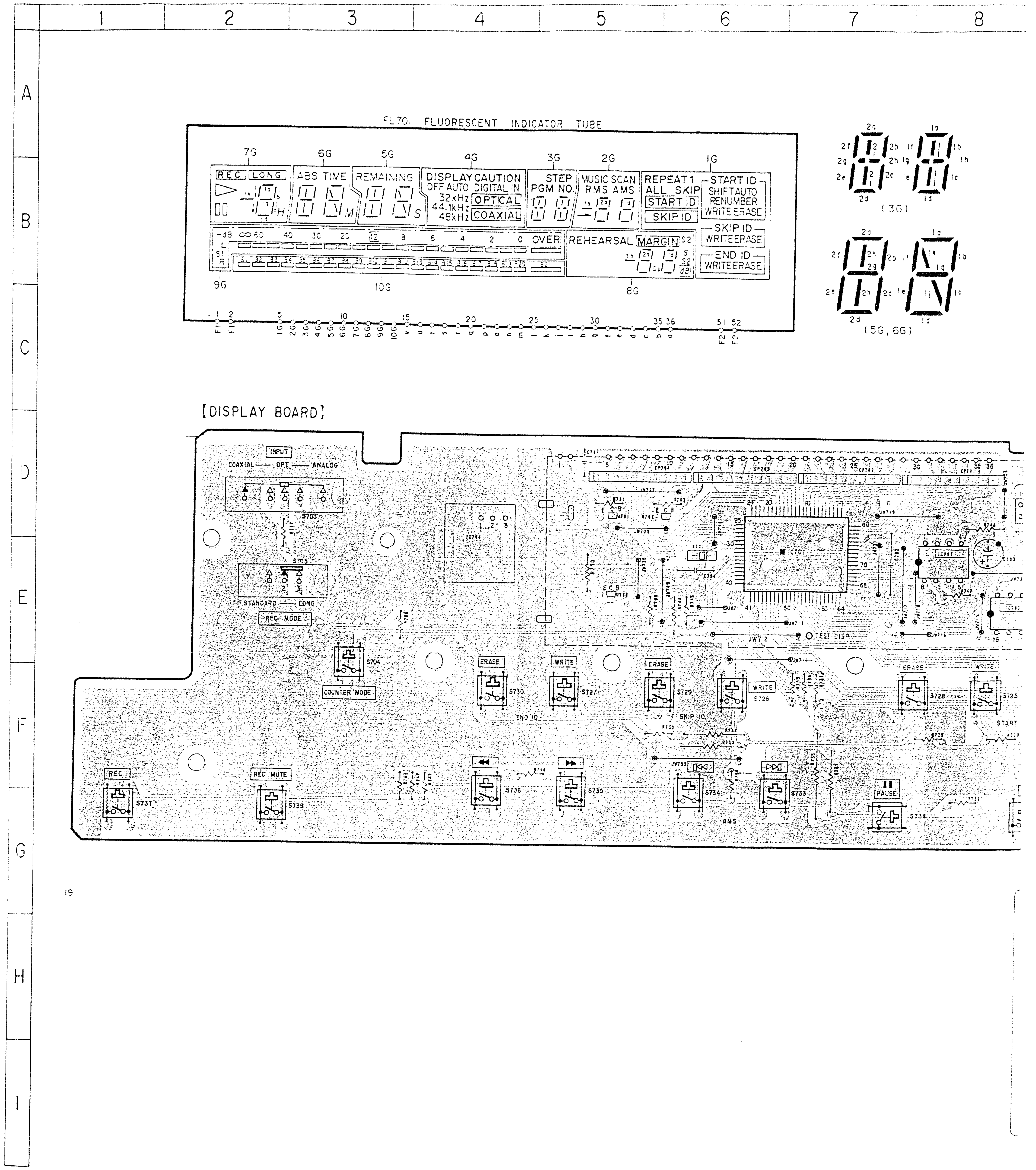
- See page 19 for circuit boards location and 26 for semiconductor lead layouts.

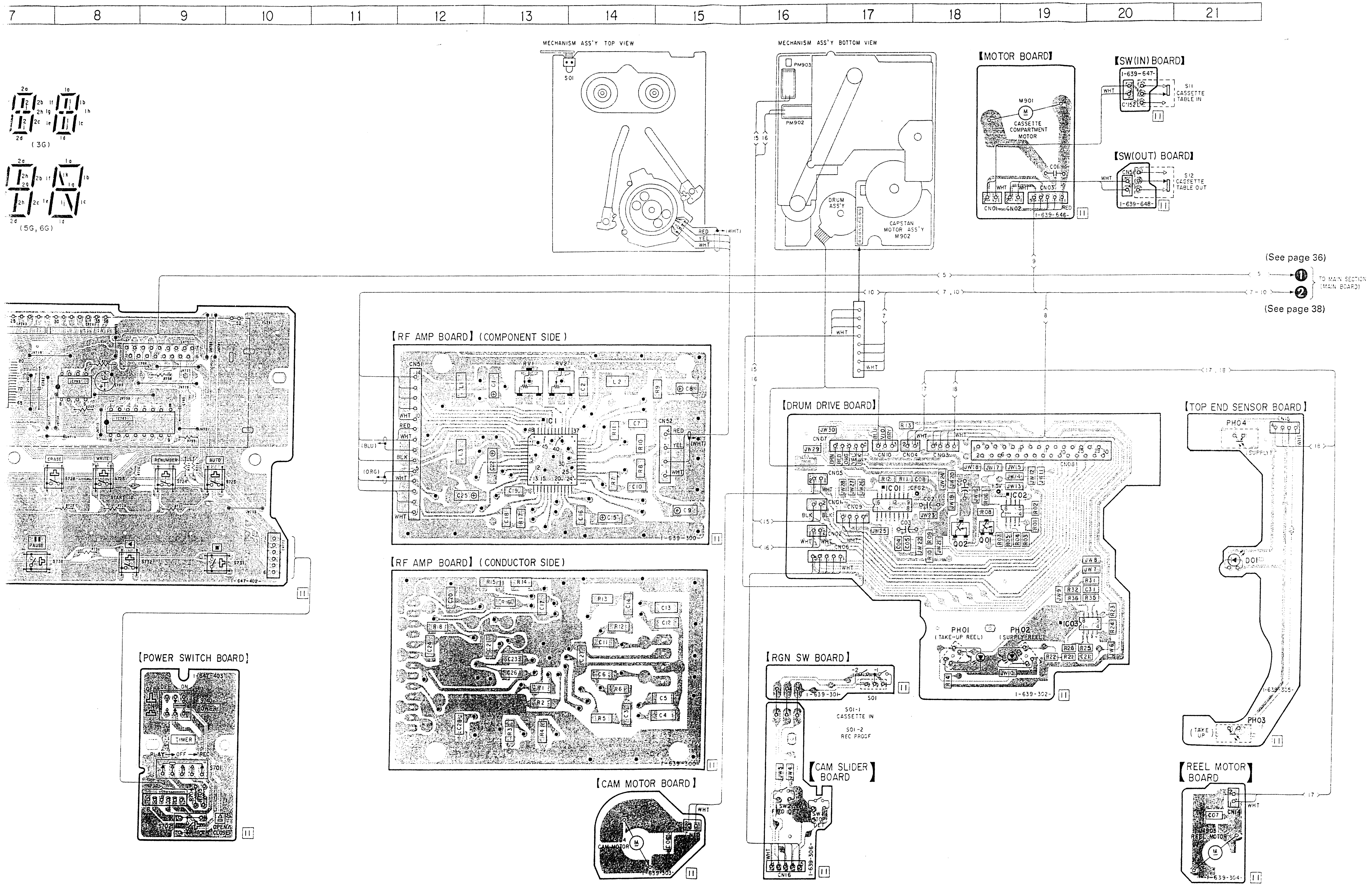
● SEMICONDUCTOR LOCATION

Ref. No.	Location
D01	G – 21
IC1	E – 13
IC01	F – 17
IC02	F – 19
IC03	G – 19
IC701	E – 6
IC702	E – 8
IC703	E – 8
IC704	D – 4
PH01	H – 18
PH02	H – 18
PH03	I – 21
PH04	E – 21
Q01	F – 18
Q02	G – 18
Q701	D – 5
Q702	D – 6
Q703	E – 5

Notes on printed wiring board:

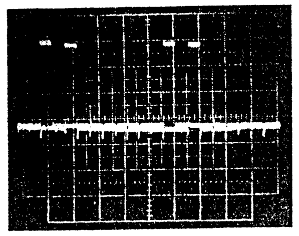
- ○——: Indicated a lead wire mounted on the component side
- ▣ : Parts mounted on the conductor side
- ● : Through hole
- ▨ : Pattern from the side which enables seeing
- ░ : Pattern of the rear side


1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
I
FL701 FLUORESCENT INDICATOR TUBE
7G
6G
5G
4G
3G
2G
1G
REC
LONG
ABS TIME
REMAINING
DISPLAY CAUTION
OFF AUTO DIGITAL IN
32kHz OPTICAL
44.1kHz
48kHz COAXIAL
STEP
PGM NO.
MUSIC SCAN
RMS AMS
REPEAT 1
ALL SKIP
START ID
SKIP ID
START ID
SHIFT AUTO
RENUMBER
WRITE ERASE
SKIP ID
WRITE ERASE
END ID
WRITE ERASE
OVER
REHEARSAL
MARGIN
9G
10G
8G
(3G)
(5G, 6G)
[DISPLAY BOARD]
INPUT
COAXIAL
OPT
ANALOG
S703
S705
STANDARD
LONG
REC MODE
S704
COUNTER MODE
ERASE
S730
END ID
WRITE
S727
ERASE
S729
SKIP ID
WRITE
S726
ERASE
S728
WRITE
S725
START
IC701
TEST DISP.
REC
S737
REC MUTE
S739
S736
S735
S734
AMS
S733
PAUSE
S738

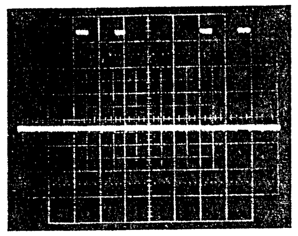

7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
(3G)
(5G, 6G)
MECHANISM ASS'Y TOP VIEW
S01
RED
YEL
WHT
(WHT)
MECHANISM ASS'Y BOTTOM VIEW
PM903
PM902
DRUM ASS'Y
CAPSTAN MOTOR ASS'Y M902
【MOTOR BOARD】
M901
CASSETTE COMPARTMENT MOTOR
C01
CN01
CN02
CN03
1-639-646-
【SW(IN) BOARD】
1-639-647-
S11 CASSETTE TABLE IN
【SW(OUT) BOARD】
1-639-648-
S12 CASSETTE TABLE OUT
(See page 36)
TO MAIN SECTION (MAIN BOARD)
(See page 38)
ERASE
WRITE
RENUMBER
AUTO
START ID
PAUSE
1-647-402-
【RF AMP BOARD】(COMPONENT SIDE)
CN51
CN52
IC1
RV1
RV2
(BLU)
(ORG)
BLK
WHT
RED
1-639-300-
【RF AMP BOARD】(CONDUCTOR SIDE)
1-639-300-
【DRUM DRIVE BOARD】
CN07
CN10
CN04
CN03
CN08
CN05
CN09
CN06
IC01
IC02
IC03
Q01
Q02
PH01 (TAKE-UP REEL)
PH02 (SUPPLY REEL)
1-639-302-
【TOP END SENSOR BOARD】
PH04
SUPPLY
D01
PH03
TAKE UP
1-639-305-
【POWER SWITCH BOARD】
1-647-403-
OFF
ON
POWER
TIMER
PLAY
REC
S701
S702
OPEN/CLOSE
【CAM MOTOR BOARD】
M904 CAM MOTOR
1-639-303-
【RGN SW BOARD】
1-639-301-
S01
S01-1 CASSETTE IN
S01-2 REC PROOF
【CAM SLIDER BOARD】
SW FWD DET
SW STOP DET
CN16
1-639-306-
【REEL MOTOR BOARD】
M905 REEL MOTOR
CN14
1-639-304-

4-3. WAVEFORMS

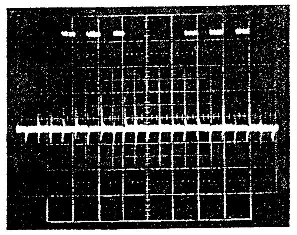
❶ FL701 ⑤-⑭pin
(1G-10G)
32Vp-p, 2.5ms



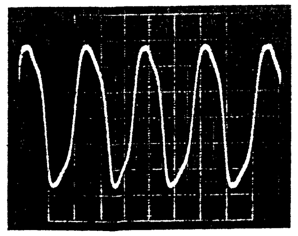
❷ IC701 ⑲-㉘pin
(10G-1G)
34Vp-p, 2.45ms



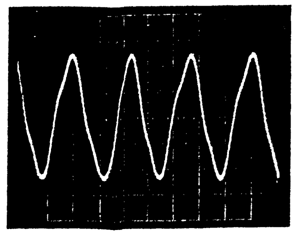
❸ IC701 (77)-(80)pin,
①-⑱pin (a-v)
38Vp-p, 1.2ms



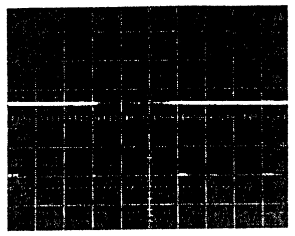
❹ IC701 ㉚piN
(XTAL)
5.5Vp-p, 2.5μs



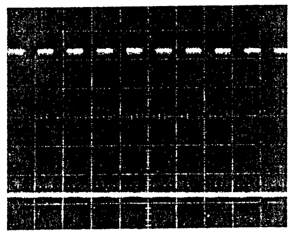
❺ IC701 ㉛pin
(EXTAL)
5Vp-p, 2.5μs



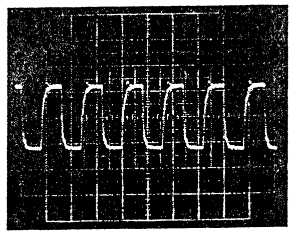
❻ IC701 ㊻pin,
IC312 ㊳pin (SI)
5.2Vp-p, 30ms



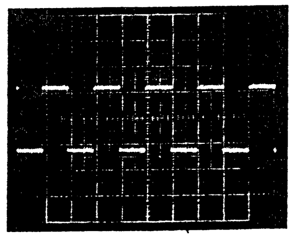
❼ IC702 ①pin
(DATA)
5Vp-p, 10μs



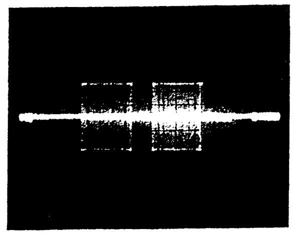
❽ IC702 ②pin
(BCK)
5Vp-p, 0.35μs



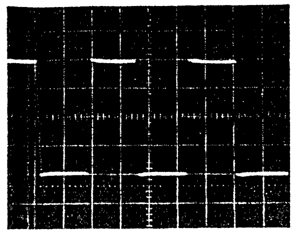
❾ IC702 ③pin
(LRCK)
5Vp-p, 20μs



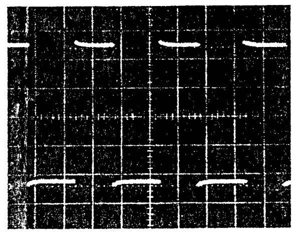
❿ IC01 ㉗,㉝pin
(HEAD) REC mode
4.2Vp-p



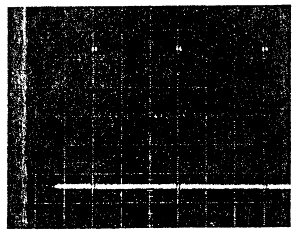
⓫ IC01 ①,⑦pin,IC311
(55),(56)pin(FGT,FGS)
FF,REW mode
4Vp-p, 2ms



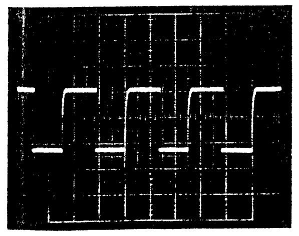
⓬ IC01 ⑩pin, IC311
(57)pin (CFG)
PLAY mode
5Vp-p, 1.5ms



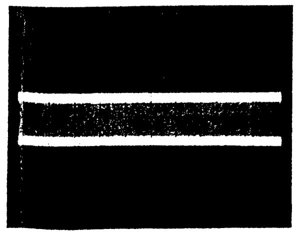
⓭ IC01 ⑦pin, IC311
(59)pin (DPG)
PLAY mode
5Vp-p, 30ms



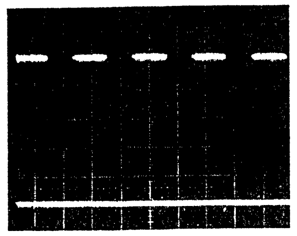
⓮ IC01 ③pin, IC311
(58)pin (DFG)
PLAY mode
5Vp-p, 1.5ms



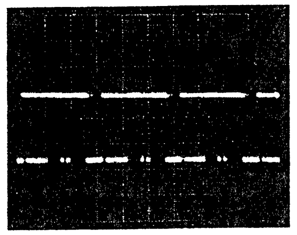
⓯ IC01 ①pin,Q440
Base (PBDT)
PLAY mode
1Vp-p



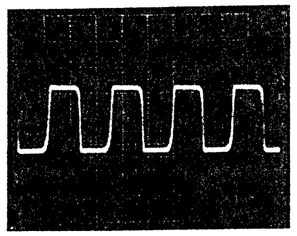
⓰ IC307 (78)pin
(DADO)
5Vp-p, 5μs



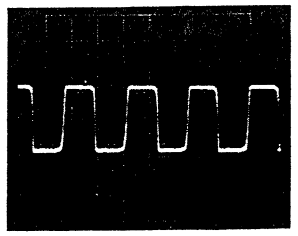
⓱ IC307 (76)pin, IC359
⑯pin (ADDT)
REC mode
5.6Vp-p, 1μs



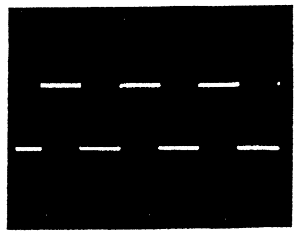
⓲ IC307 (75)pin
(BCK)
5.2Vp-p, 0.3μs



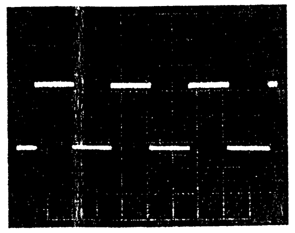
⓳ IC307 (74)pin, IC359
⑮pin (XBCK)
5Vp-p, 0.48μs



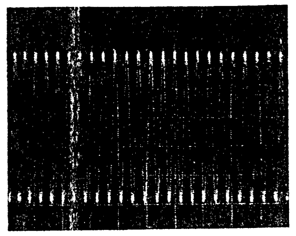
⓴ IC307 (72)pin
(LRCK)
5Vp-p, 32μs



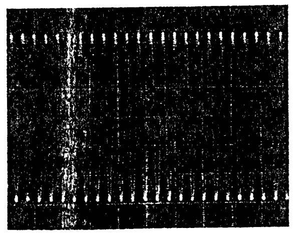
㉑ IC307 (69)pin,IC359
⑭pin (LR03)
5Vp-p, 20μs



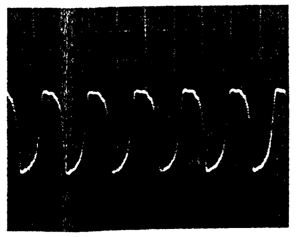
㉒ IC307 (67)pin
(XT3I)
1.4Vp-p, 0.12μs



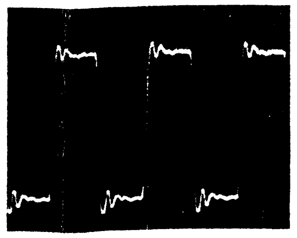
㉓ IC307 (66)pin
(XT3O)
6Vp-p, 0.2μs



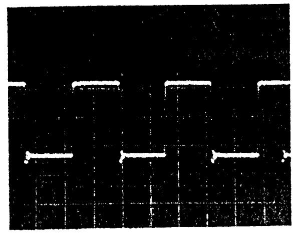
㉔ IC307 (59)pin, IC359
⑳pin
5Vp-p, 0.05μs



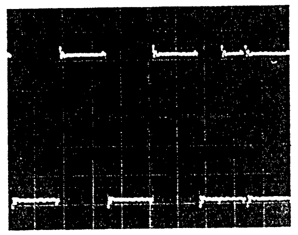
㉕ IC307 (58)pin
(F128)
5.8Vp-p, 0.17μs



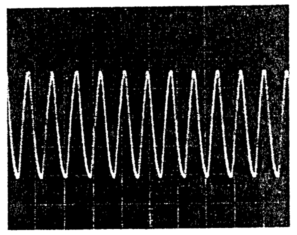
㉖ IC307 (54)pin
(TX)
PLAY mode
5Vp-p, 0.64μs



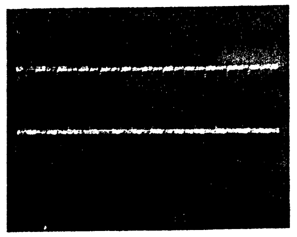
㉗ IC307 (52)pin
(RX)
5.2Vp-p, 0.64ms



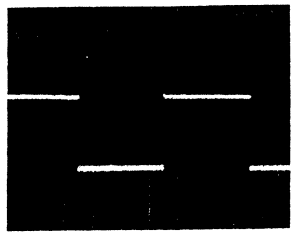
㉘ IC307 ㊽pin
(PLCO)
3.7Vp-p, 0.052ms



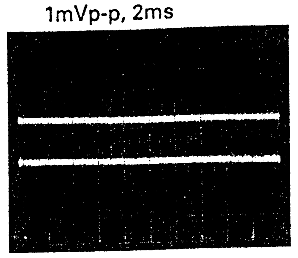
㉙ IC307 ㊸pin
(REDT)
REC mode
5Vp-p, 0.84μs



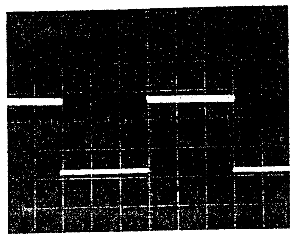
㉚ IC307 ㊴pin, IC311
(63)pin (SWP)
PLAY mode
5.2Vp-p, 30ms



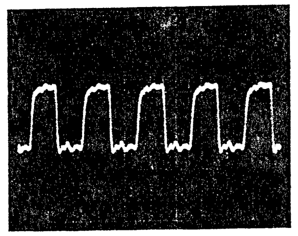
㉛ IC307 ㊲pin, IC311
(62)pin (RFDT)
PLAY mode
1mVp-p, 2ms



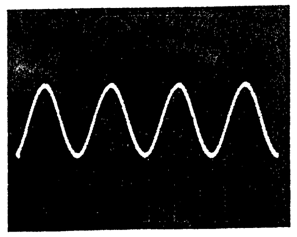
㉜ IC307 ㉑pin, IC311
(60)pin (DREF)
5Vp-p, 30ms



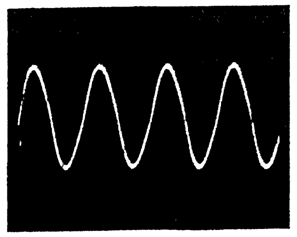
㉝ IC307 ⑳pin, IC311
㉟,(61)pin IC312 ㉟pin
(MCLK)
5.5Vp-p, 0.15μs



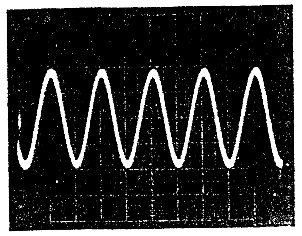
㉞ IC307 ⑭pin
(XT1I)
2.8Vp-p, 18.816MHz



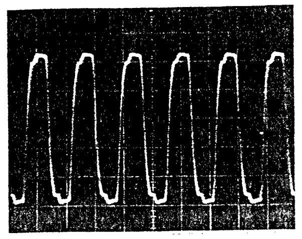
㉟ IC307 ⑬pin
(XT10)
4.4Vp-p, 18.816MHz



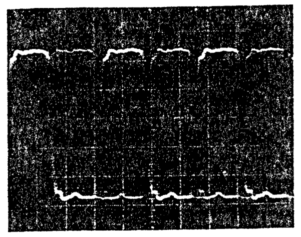
㊱ IC362 ⑪pin, IC502
①,⑥pin (XIN)
3Vp-p, 0.5μs



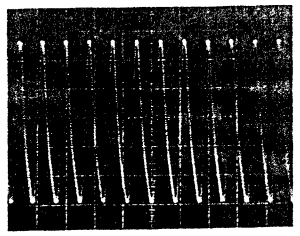
㊲ IC362 ⑦pin
(BCK)
5.4Vp-p, 80ns



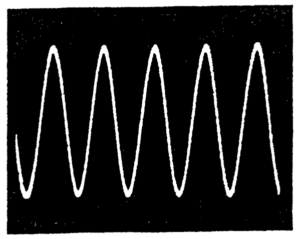
㊳ IC362 ⑥,⑤pin
(DATAL, DATAR)
5.4Vp-p, 0.18μs



㊴ IC362 ④pin
(LRCK)
5.6Vp-p, 0.52μs

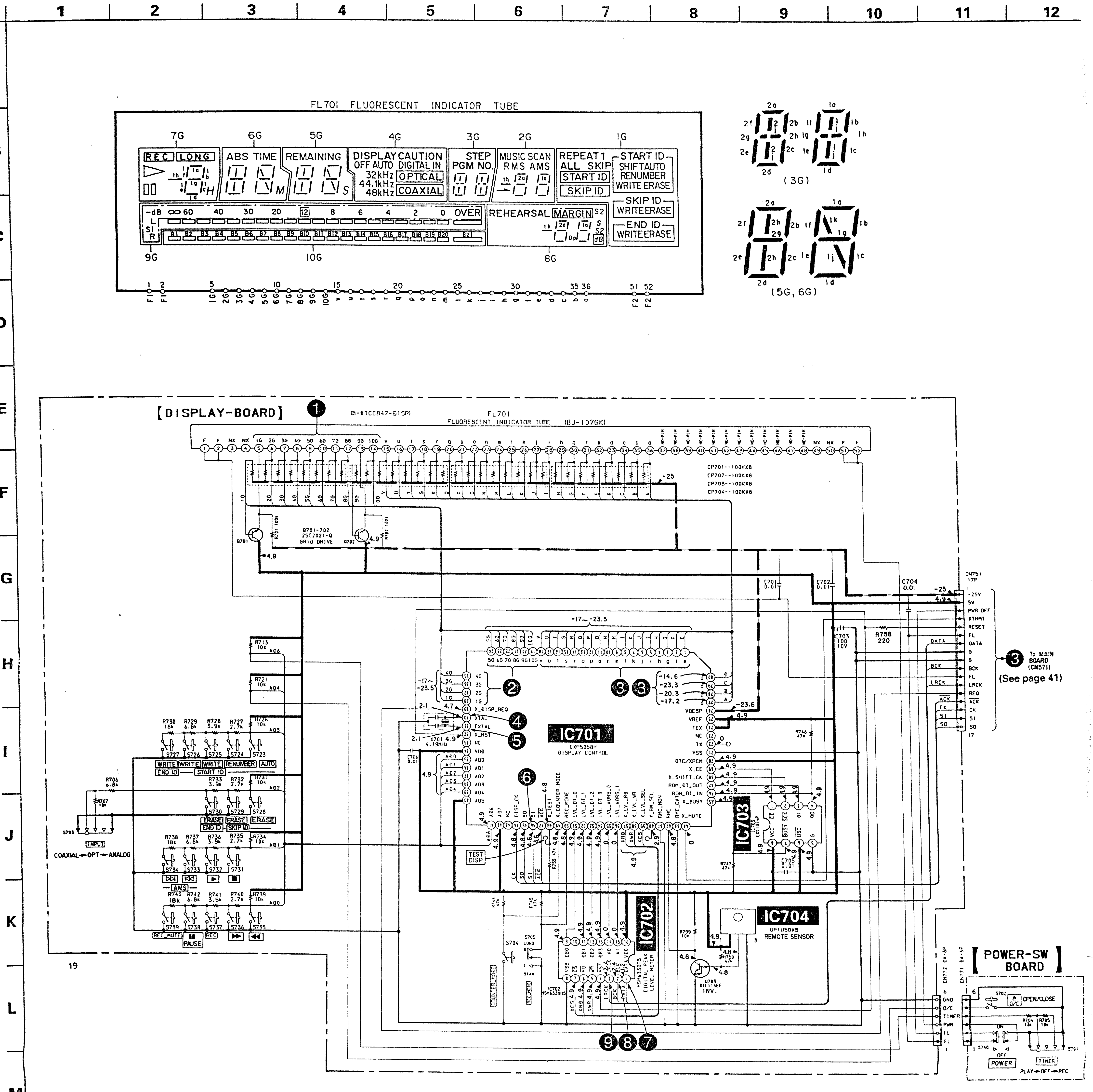


㊵ IC364 ⑰pin
(MCLK)
3.6Vp-p, 52ns

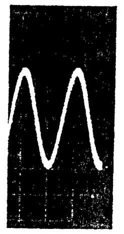


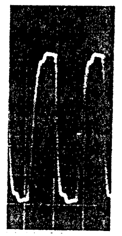
4-6. SCHEMATIC DIAGRAM – MD/POWER SUPPLY/DISPLAY SECTION –

• See page 23 for waveforms, 43 for IC block diagrams and 47 for pin functions.

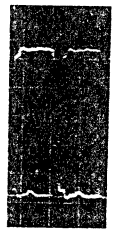

FL701 FLUORESCENT INDICATOR TUBE
7G
6G
5G
4G
3G
2G
1G
REC
LONG
ABS TIME
REMAINING
DISPLAY CAUTION
OFF AUTO DIGITAL IN
32kHz
44.1kHz
48kHz
OPTICAL
COAXIAL
STEP
PGM NO.
MUSIC SCAN
RMS AMS
REPEAT1
ALL SKIP
START ID
SKIP ID
START ID
SHIFT AUTO
RENUMBER
WRITE ERASE
SKIP ID
WRITE ERASE
END ID
WRITE ERASE
REHEARSAL
MARGIN
OVER
9G
10G
8G
(3G)
(5G, 6G)
[DISPLAY-BOARD]
FL701
FLUORESCENT INDICATOR TUBE (BJ-1076K)
CP701--100KX8
CP702--100KX8
CP703--100KX8
CP704--100KX8
Q701-702
2SC2021-Q
GRID DRIVE
IC701
CXP5058H
DISPLAY CONTROL
IC702
MSM6338RS
DIGITAL PEAK
LEVEL METER
IC703
CXK1020
IC704
GP1U50XB
REMOTE SENSOR
D703
DTC114EF
INV.
X701
4.19MHz
CN751
17P
To MAIN BOARD (CN571)
(See page 41)
[POWER-SW BOARD]
CN772 6P
CN771 6P
OPEN/CLOSE
POWER
TIMER
PLAY←OFF→REC
INPUT
COAXIAL←OPT←ANALOG
WRITE
END ID
START ID
RENUMBER
AUTO
ERASE
SKIP ID
AMS
PAUSE
REC
REC_MUTE
TEST DISP
COUNTER_MODE
REC_MODE
19

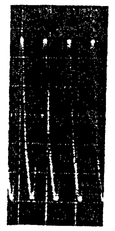
, IC502
N)

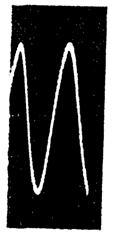




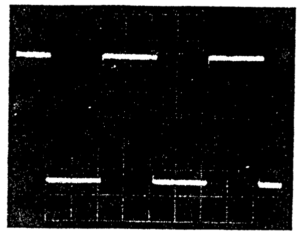
in
TAR)



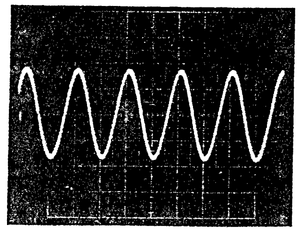




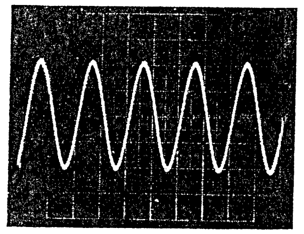
㊶ IC364 ⑩pin
(LRCKI)
5Vp-p, 21µs



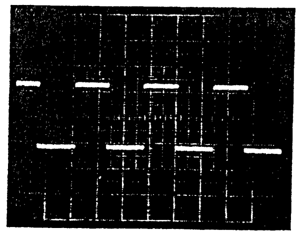
㊷ IC501 CATHODE
(VCO)
3Vp-p, 0.75µs



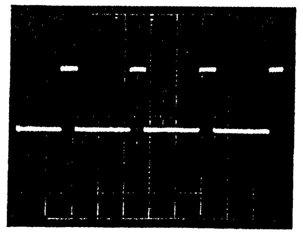
㊸ Q502 SOURCE
(VCO)
3Vp-p, 0.52µs



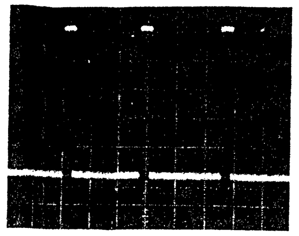
㊹ IC311 (64)pin
(D PWM)
PLAYmode
5Vp-p, 28µs



㊺ IC311 (65),(66)pin
(CPWM, PWMR)
PLAY mode
5.2Vp-p, 28µs

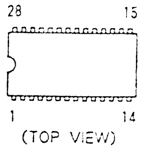


㊻ IC311 (67),(68)pin
(TEN PWM, AGC
PWM) PLAY mode
5Vp-p, 28µs

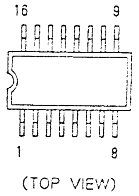


4-4. SEMICONDUCTOR LEAD LAYOUTS

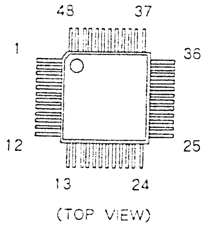
AK5339


28
15
1
14
(TOP VIEW)

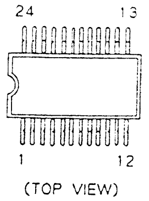
CX20115A


16
9
1
8
(TOP VIEW)

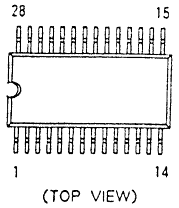
CXA1364R


48
37
1
36
12
25
13
24
(TOP VIEW)

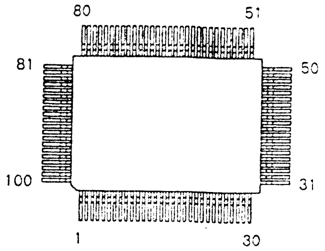
CXD2560M


24
13
1
12
(TOP VIEW)

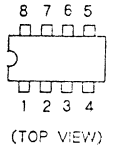
CXD2561BM-1
CXK58257AM-12L


28
15
1
14
(TOP VIEW)

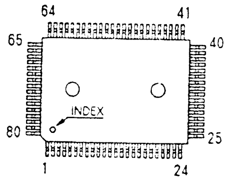
CXD2601AQ


80
51
81
50
100
31
1
30

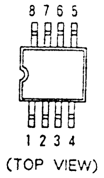
CXK1013P
M5238P
NE5532P
µPC358C


8 7 6 5
1 2 3 4
(TOP VIEW)

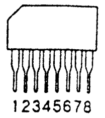
CXP5058H-660Q
CXP80524-073Q
CXP80524-075Q


64
41
65
40
INDEX
80
25
1
24

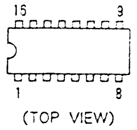
LM358M


8 7 6 5
1 2 3 4
(TOP VIEW)

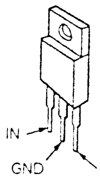
M5218AL
M54641L



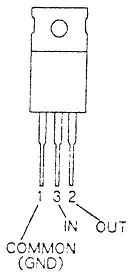
MSM6338RS


15
9
1
8
(TOP VIEW)

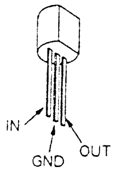
M5F7805L
M5F7905



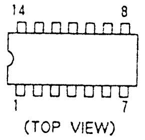
M5F7905L
TA7912S


1 3 2
IN
OUT
COMMON
(GND)

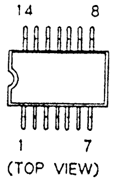
PST529E



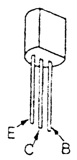
SN74HCU0AN
TC74HC00AP


14
8
1
7
(TOP VIEW)

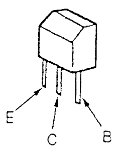
SN74HC74AN


14
8
1
7
(TOP VIEW)

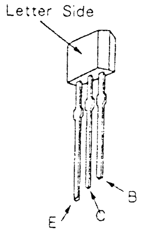
DTA114ES
DTC114ES
2SC2603-EF
2SD1387



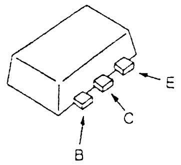
KSA708



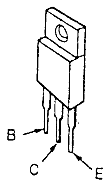
2SA1585S-QR
2SC4115S-QR


Letter Side
E
C
B

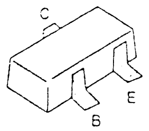
2SB798-DL



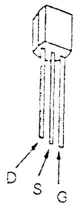
2SB1094-LK
2SD2012



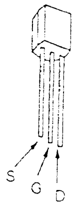
2SC1623



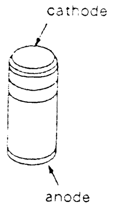
2SK241-GR



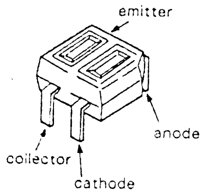
2SK246-GR



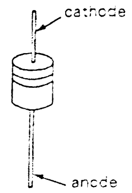
GL-453


cathode
anode

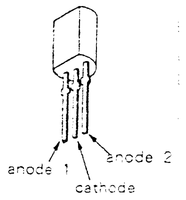
GP2S09-C


emitter
anode
collector
cathode

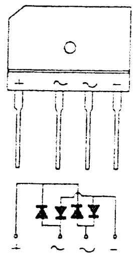
HZS6A1L
UZ-7L2
10E2N
11ES2


cathode
anode

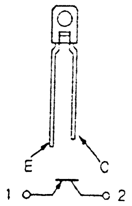
KV1260


anode 1
anode 2
cathode

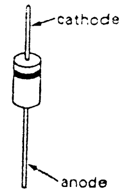
RBA406B

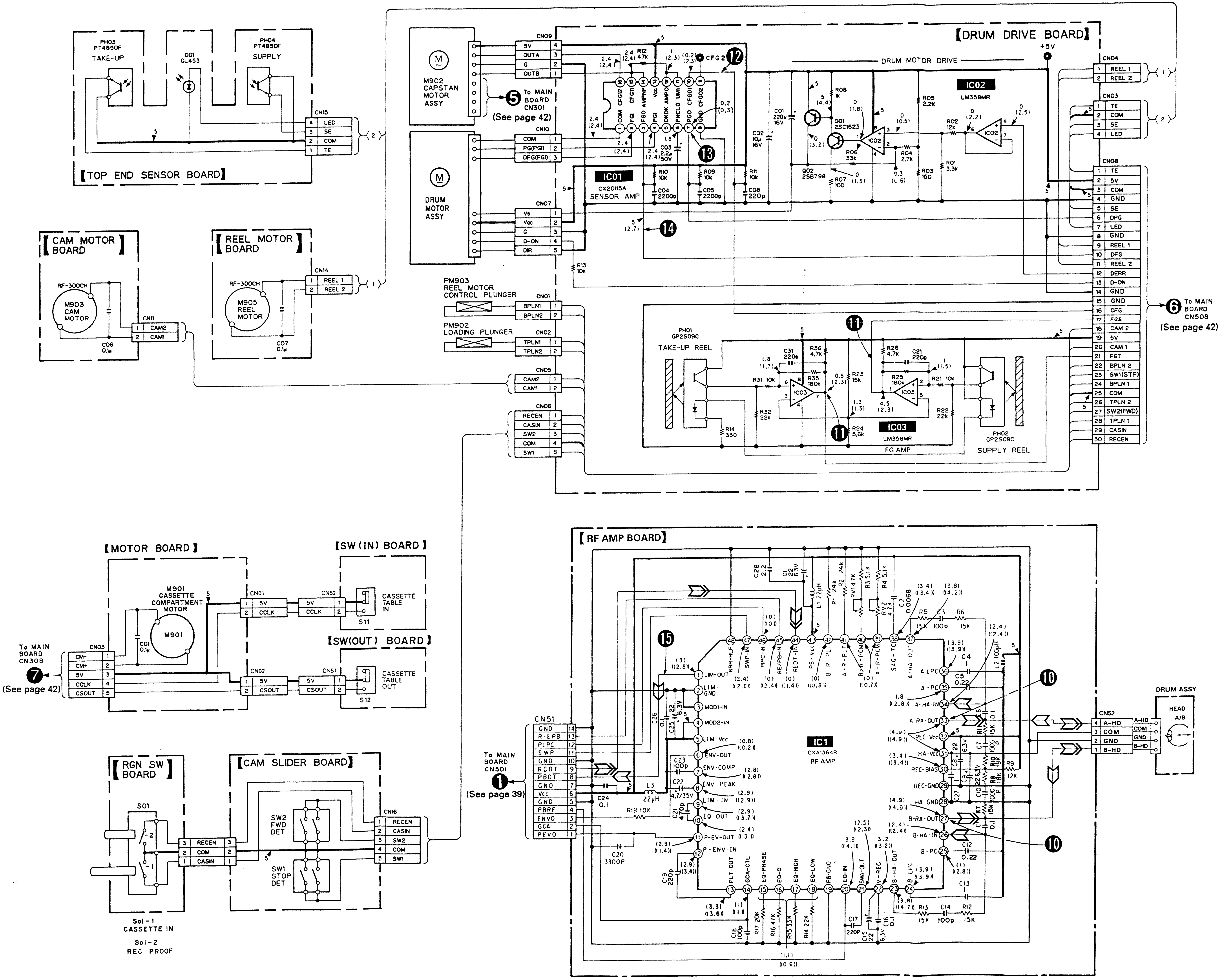


PT4850F



1N4148M


cathode
anode



【TOP END SENSOR BOARD】
PH03 PT4850F TAKE-UP
D01 GL453
PH04 PT4850F SUPPLY
CN15
LED
SE
COM
TE
【DRUM DRIVE BOARD】
M902 CAPSTAN MOTOR ASSY
To MAIN BOARD CN301
(See page 42)
DRUM MOTOR ASSY
CN09
5V
OUTA
G
OUTB
CN10
COM
PG(PGI)
DFG(FGI)
CN07
Vs
Vcc
G
D-ON
DIR
IC01
CX20115A
SENSOR AMP
CFG2
DRUM MOTOR DRIVE
+5V
IC02
LM358MR
Q01 2SC1623
Q02 2SB798
CN04
REEL 1
REEL 2
CN03
TE
COM
SE
LED
CN08
TE
5V
COM
GND
SE
DPG
LED
GND
REEL 1
DFG
REEL 2
DERR
D-ON
GND
GND
CFG
FGS
CAM 2
5V
CAM 1
FGT
BPLN 2
SW1(STP)
BPLN 1
COM
TPLN 2
SW2(FWD)
TPLN 1
CASIN
RECEN
To MAIN BOARD CN508
(See page 42)
PM903 REEL MOTOR CONTROL PLUNGER
CN01
BPLN1
BPLN2
PM902 LOADING PLUNGER
CN02
TPLN1
TPLN2
CN05
CAM2
CAM1
CN06
RECEN
CASIN
SW2
COM
SW1
PH01 GP2S09C
TAKE-UP REEL
PH02 GP2S09C
SUPPLY REEL
IC03
LM358MR
FG AMP
【CAM MOTOR BOARD】
RF-300CH
M903 CAM MOTOR
CN11
CAM2
CAM1
C06 0.1μ
【REEL MOTOR BOARD】
RF-300CH
M905 REEL MOTOR
CN14
REEL 1
REEL 2
C07 0.1μ
【MOTOR BOARD】
M901 CASSETTE COMPARTMENT MOTOR
M901
C01 0.1μ
CN03
CM-
CM+
5V
CCLK
CSOUT
To MAIN BOARD CN308
(See page 42)
CN01
5V
CCLK
CN02
5V
CSOUT
【SW(IN) BOARD】
CN52
S11
CASSETTE TABLE IN
【SW(OUT) BOARD】
CN51
S12
CASSETTE TABLE OUT
【RGN SW BOARD】
S01
Sol-1 CASSETTE IN
Sol-2 REC PROOF
【CAM SLIDER BOARD】
RECEN
COM
CASIN
SW2 FWD DET
SW1 STOP DET
CN16
RECEN
CASIN
SW2
COM
SW1
【RF AMP BOARD】
CN51
GND
R-EPB
PIPC
SWP
GND
RCDT
PBDT
GND
Vcc
GND
PBRF
ENVO
GCA
PEVO
To MAIN BOARD CN501
(See page 39)
IC1
CXA1364R
RF AMP
LIM-OUT
LIM-GND
MOD1-IN
MOD2-IN
LIM-Vcc
ENV-OUT
ENV-COMP
ENV-PEAK
LIM-IN
EQ-OUT
P-EV-OUT
P-ENV-IN
FLT-OUT
GCA-CTL
EQ-PHASE
EQ-Q
EQ-HIGH
EQ-LOW
PB-GND
EQ-IN
SWG-OUT
V-REG
B-HA-OUT
B-LPC
B-PC
B-HA-IN
B-RA-OUT
HA-GND
REC-GND
REC-BIAS
HA-Vcc
REC-Vcc
A-RA-OUT
A-HA-IN
A-PC
A LPC
A-HA-OUT
SAG-TC
A-R-PCM
B-R-PCM
A-R-PLT
B-R-PLT
PB-Vcc
REDT-IN
RE/PB-IN
PIPC-IN
SWP-IN
NRR-HLF
CN52
A-HD
COM
GND
B-HD
DRUM ASSY
HEAD A/B

Notes on schematic diagram:

- All capacitors are in µF unless otherwise noted. pF: µµF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/4W or less unless otherwise noted.
- △ : Internal component
- -ᴡᴡ∿- : Fuse resistor

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

- ━━━ : B + Line
- ■■■■ : B – Line
- ▭ : Adjustment for repair
- Voltage are dc with respect to ground under no-signal (STOP) conditions.

No mark : Stop
( ) : PLAY
(( )) : REC
< > : FF
<< >> : REW
[ ] : MOMENTARILY WHEN and BUTTON IS PRESSED.
[[ ]] : MUTING

- Voltages are taken with a VOM (input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Signal path

▷ : PB
▷▷ : REC

4-7. PRINTED WIRING BOARDS – MAIN SECTION –

- See page 19 fo

● SEMICONDUCTOR LOCATION

Ref. No.	Location	Ref. No.	Location
D101	C – 8	IC432	D – 9
D102	B – 8	IC433	D – 8
D201	C – 9	IC901	I – 15
D202	B – 9		
D301	E – 11	Q302	E – 6
		Q311	D – 15
D302	E – 12	Q312	E – 15
D305	F – 13	Q313	E – 15
D306	H – 7	Q318	H – 7
D308	D – 14		
D314	H – 7	Q319	H – 7
		Q320	H – 7
D315	G – 7	Q321	H – 7
D501	B – 12	Q333	D – 8
D901	H – 14	Q334	D – 7
D905	I – 12		
D907	H – 11	Q335	D – 7
		Q336	H – 6
D908	H – 11	Q337	H – 6
D909	H – 11	Q338	I – 7
D910	H – 13	Q339	I – 7
D911	H – 14		
D912	H – 14	Q340	I – 7
		Q341	H – 6
D913	H – 14	Q342	D – 6
D914	H – 14	Q432	E – 13
D920	F – 14	Q433	C – 15
D921	F – 14		
D922	F – 14	Q434	C – 15
		Q435	E – 15
IC301	E – 13	Q436	E – 13
IC302	F – 13	Q437	E – 15
IC304	G – 13	Q438	E – 13
IC307	F – 10		
IC310	G – 10	Q439	E – 13
		Q440	H – 10
IC311	G – 6	Q442	H – 8
IC312	F – 8	Q501	B – 11
IC316	E – 6	Q502	B – 11
IC317	F – 6		
IC318	D – 6	Q503	F – 11
		Q504	G – 12
IC319	H – 7	Q505	G – 12
IC320	I – 8	Q901	H – 13
IC321	D – 9	Q902	I – 15
IC331	F – 14		
IC332	G – 14	Q903	I – 15
		Q904	H – 15
IC356	D – 15	Q905	H – 15
IC357	B – 8	Q906	H – 13
IC358	C – 8	Q920	G – 14
IC359	B – 10		
IC360	B – 7	Q921	G – 13
		Q922	F – 14
IC361	B – 7	Q923	F – 14
IC362	D – 10	Q924	G – 15
IC364	D – 10	Q925	G – 13
IC374	B – 12		
IC375	D – 13	Q926	G – 14
		Q927	G – 13
IC376	B – 13	Q928	F – 14
IC401	E – 4	Q929	I – 14
IC431	D – 9		

Notes on printed wiring board:

- o——: Indicated a lead wire mounted on the component side.
- ■ : Parts mounted on the conductor side
- ▨ : Pattern from the side which enables seeing

Notes on schematic diagram:

- All capacitors are in µF unless otherwise noted. pF: µµF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/4W or less unless otherwise noted.

-⌇WVV⌇- : Fuse resistor

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

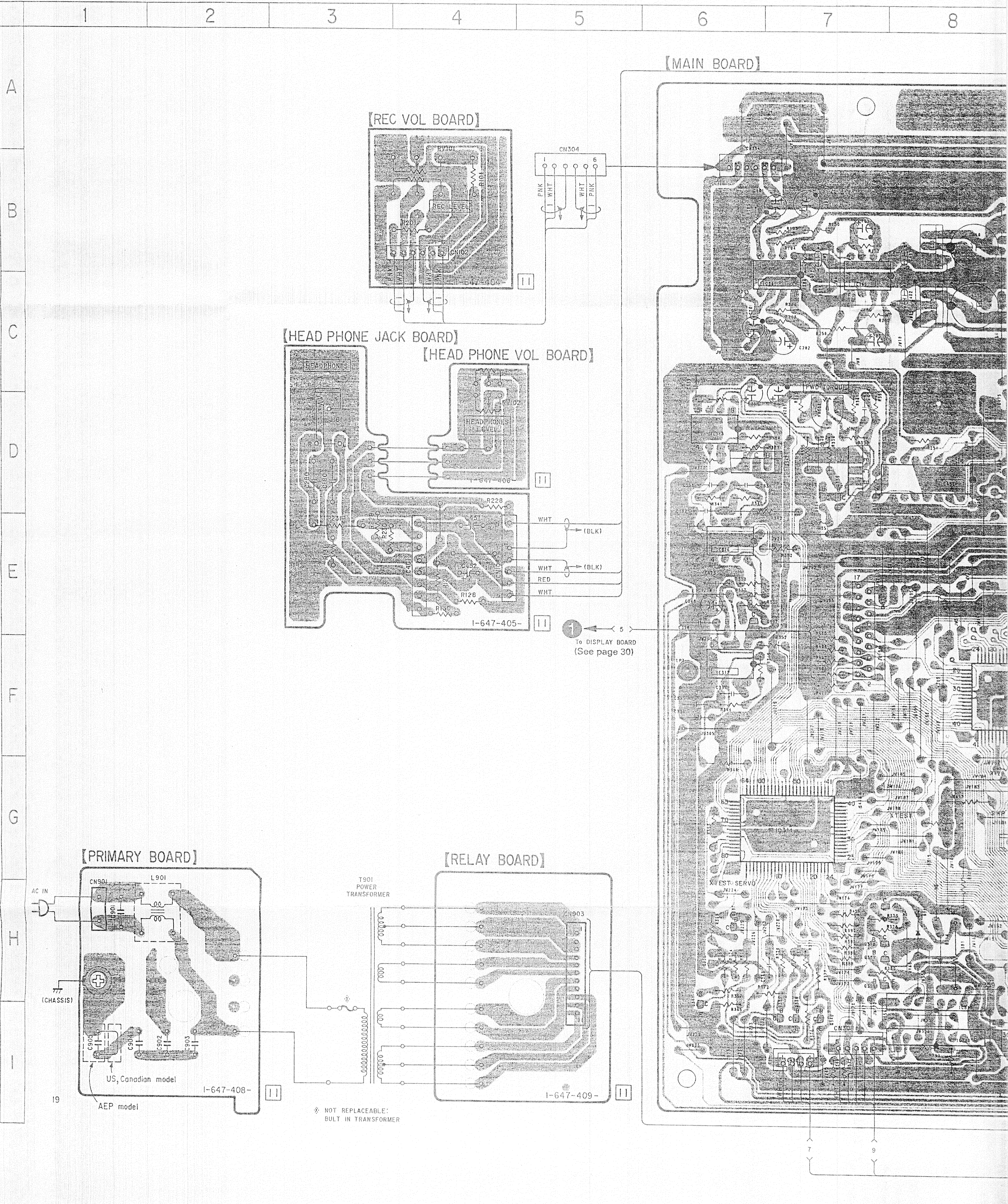
- ▬▬▬ : B + Line
- ▪▪▪▪ : B - Line
- Voltage are dc with respect to ground under no-signal (STOP) conditions.

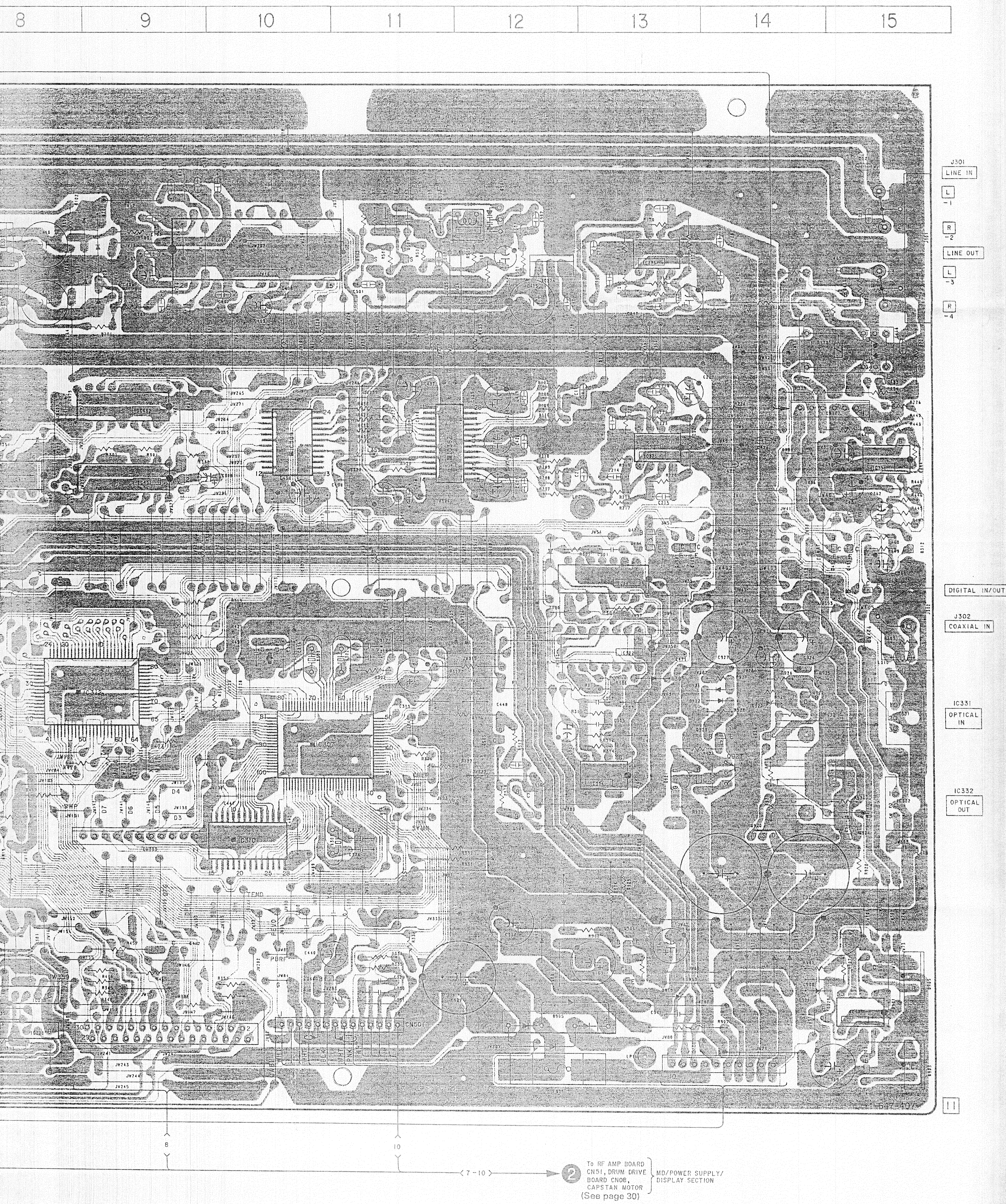
No mark : Stop
( ) : PLAY
(( )) : REC
< > : FF
<< >> : REW
[ ] : MOMENTARILY WHEN and BUTTON IS PRESSED.
[[ ]] : MUTING

- Voltages are taken with a VOM (input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Signal path

⊳ : PB
⊳⊳ : REC

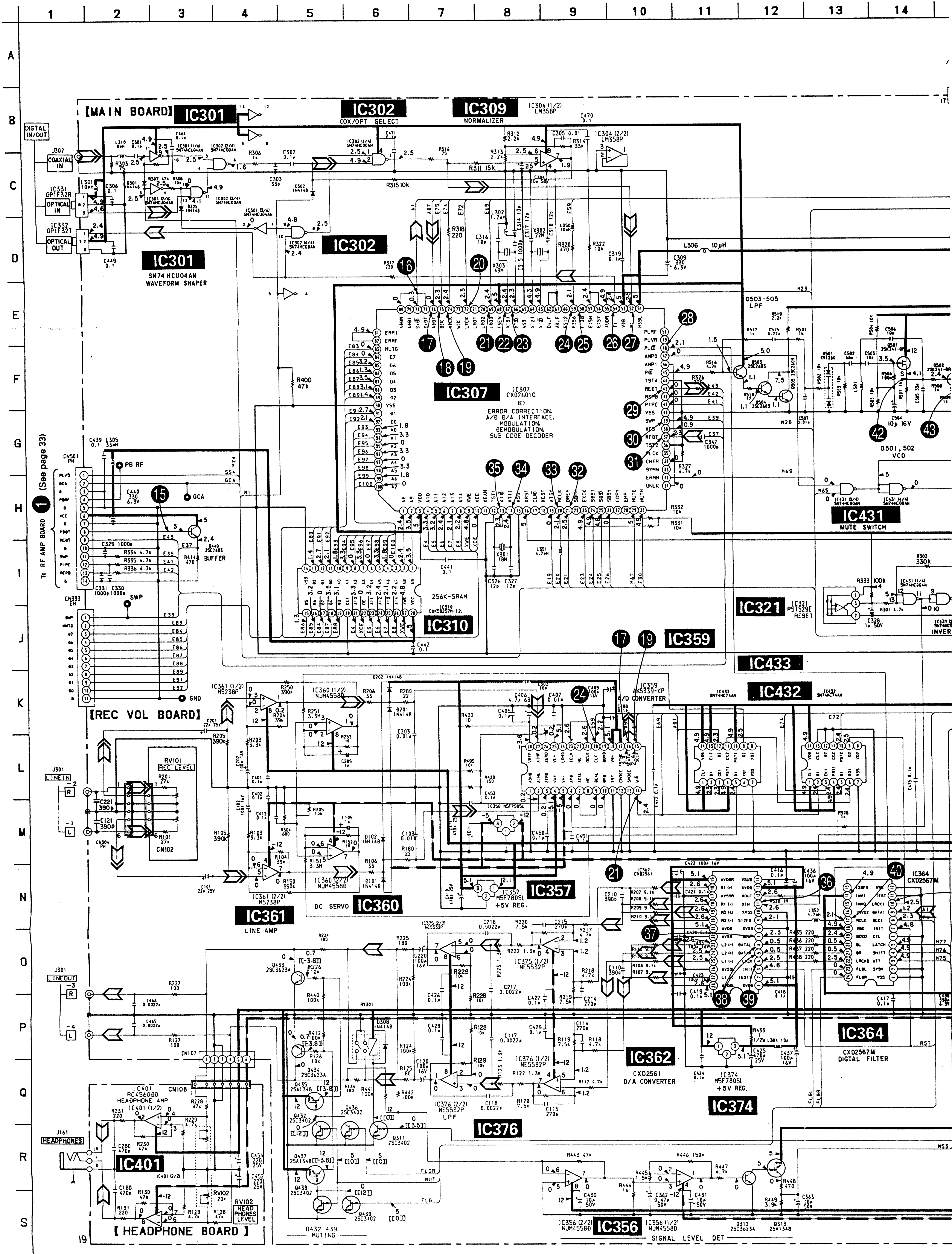
circuit boards location and 26 for semiconductor lead layouts.


1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
I
[MAIN BOARD]
[REC VOL BOARD]
RV101
R101
REC LEVEL
CN102
PNK
WHT
1-647-404
CN304
1
6
[HEAD PHONE JACK BOARD]
[HEAD PHONE VOL BOARD]
HEADPHONES
RV102
HEADPHONES LEVEL
1-647-406
R228
R128
R130
C152
1-647-405-
WHT
(BLK)
RED
To DISPLAY BOARD
(See page 30)
5
FWD TORQUE
IC301
X-TEST SERVO
CN308
[PRIMARY BOARD]
CN901
L901
AC IN
(CHASSIS)
C905
C904
C902
C903
US, Canadian model
AEP model
1-647-408-
[RELAY BOARD]
T901
POWER
TRANSFORMER
CN903
1-647-409-
* NOT REPLACEABLE:
BULT IN TRANSFORMER
19
7
9
11

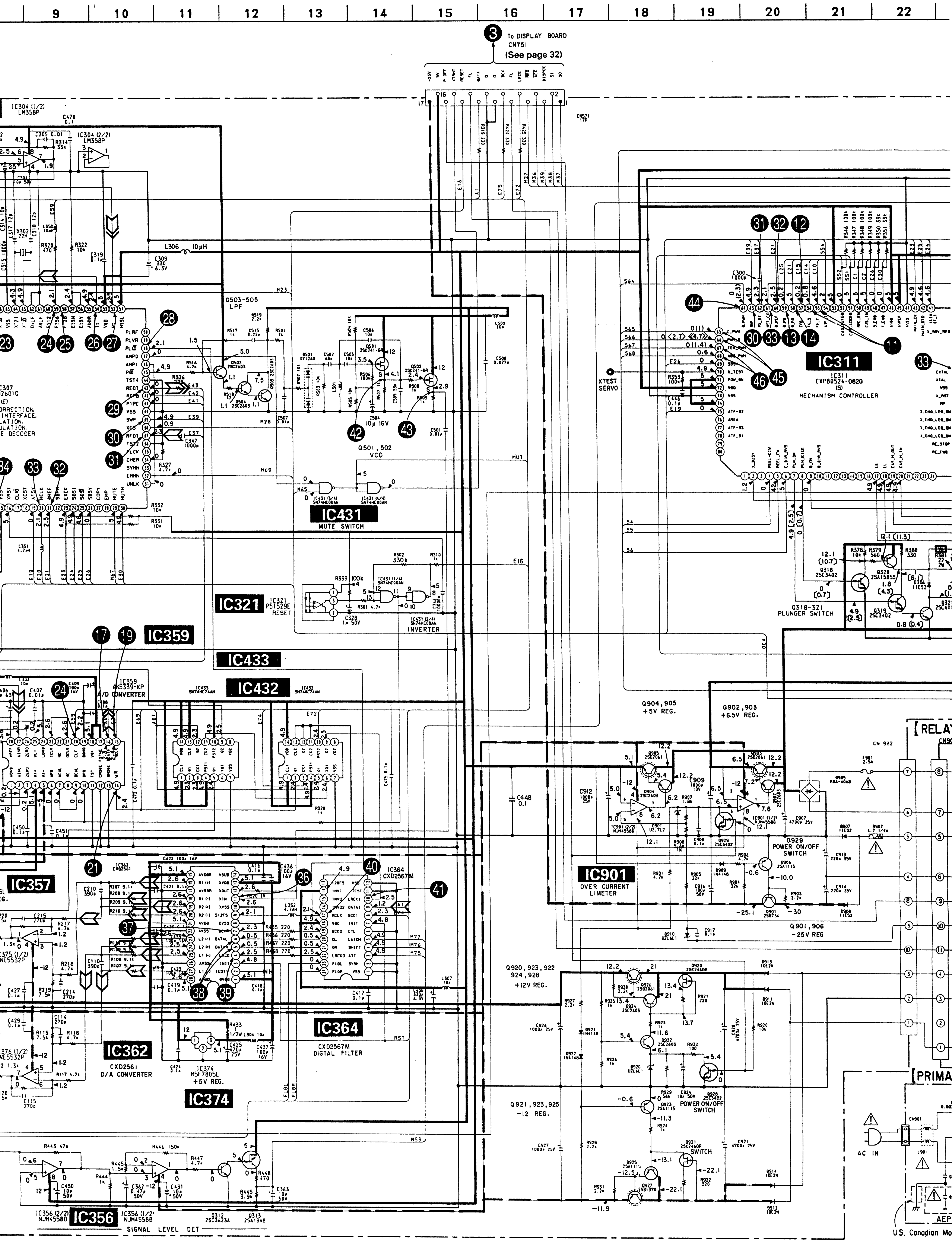

8
9
10
11
12
13
14
15
J301
LINE IN
L
-1
R
-2
LINE OUT
L
-3
R
-4
DIGITAL IN/OUT
J302
COAXIAL IN
IC331
OPTICAL IN
IC332
OPTICAL OUT
IC312
IC370
CN501
8
10
⟨7 - 10⟩
11

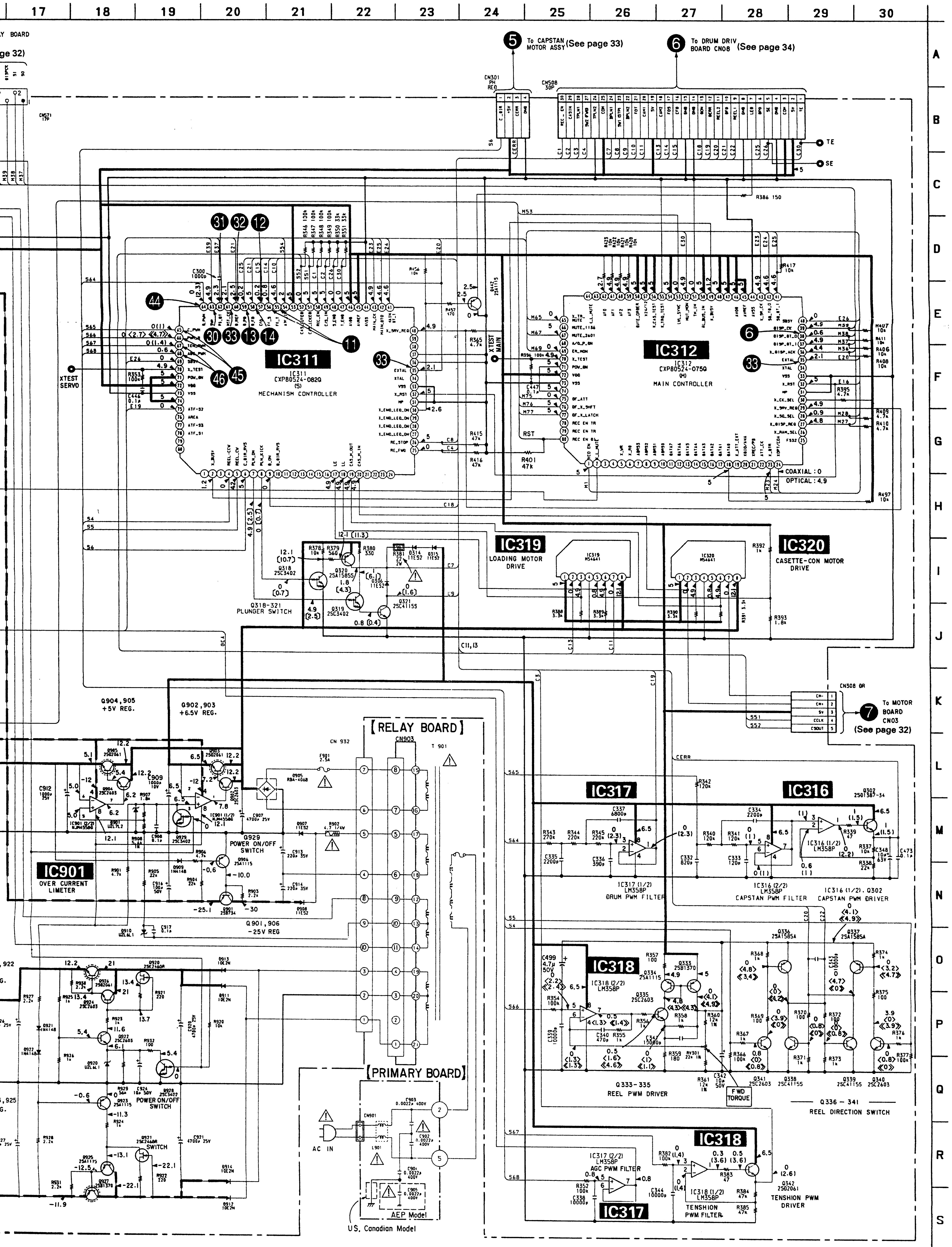
② To RF AMP BOARD CN51, DRUM DRIVE BOARD CN08, CAPSTAN MOTOR (See page 30) } MD/POWER SUPPLY/ DISPLAY SECTION

4-8. SCHEMATIC DIAGRAM – MAIN SECTION – • See page 19 for waveforms, 39 for IC block diagrams and 43 for pin functions.


[MAIN BOARD]
IC301
SN74HCU04AN
WAVEFORM SHAPER
IC302
COX/OPT SELECT
IC309
NORMALIZER
IC304 (1/2) LM358P
IC304 (2/2) LM358P
DIGTAL IN/OUT
J302 COAXIAL IN
IC331 GP1F32R OPTICAL IN
IC332 GP1F32T OPTICAL OUT
IC307
CXD2601Q
ERROR CORRECTION.
A/D D/A INTERFACE.
MODULATION.
DEMODULATION.
SUB CODE DECODER
0503-505 LPF
Q501, 502 VCO
IC431
MUTE SWITCH
IC321 PST529E RESET
IC310
CXK58257M-12L
256K-SRAM
To RF AMP BOARD (See page 33)
CN501
CN333
PB RF
GCA
SWP
Q440 2SC2403 BUFFER
GND
[REC VOL BOARD]
RV101 REC LEVEL
CN102
J301 LINE IN
IC359
AK5339-KP
A/D CONVERTER
IC433
IC432
IC361 (1/2) M5238P
IC361 (2/2) M5238P
IC361
LINE AMP
IC360 (1/2) NJM4558D
IC360 (2/2) NJM4558D
DC SERVO
IC360
IC358 M5F7905L
IC357 M5F7805L +5V REG.
IC357
IC362 CXD2561
IC362
CXD2561
D/A CONVERTER
IC364 CXD2567M
IC364
CXD2567M
DIGTAL FILTER
IC374 M5F7805L +5V REG.
IC374
IC375 (1/2) NE5532P
IC375 (2/2) NE5532P
IC376 (1/2) NE5532P
IC376 (2/2) NE5532P LPF
IC376
J301 LINEOUT
RY301
Q432-439 MUTING
IC401 RC4560DD HEADPHONE AMP
IC401
J161 HEADPHONES
RV102 HEAD PHONES LEVEL
[HEADPHONE BOARD]
IC356 (2/2) NJM4558D
IC356 (1/2) NJM4558D
IC356
SIGNAL LEVEL DET
Q312 2SC3623A
Q313 2SA1348

agrams and 43 for pin functions.

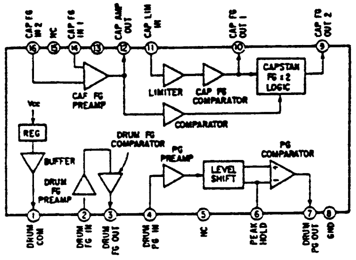

9
10
11
12
13
14
15
16
17
18
19
20
21
22
③ To DISPLAY BOARD CN751 (See page 32)
CN571 17P
IC304 (1/2) LM358P
IC304 (2/2) LM358P
L306 10μH
Q503-505 LPF
Q501, 502 VCO
IC431 MUTE SWITCH
IC321 PST529E RESET
IC431 (2/4) SN74HC00AN INVERTER
IC359
IC359 AK5339-KP A/D CONVERTER
IC433
IC432
IC433 SN74HC74AN
IC432 SN74HC74AN
IC357
IC362
CXD2561 D/A CONVERTER
IC364
CXD2567M DIGITAL FILTER
IC374
IC374 M5F7805L +5V REG.
IC356
IC356 (2/2) NJM4558D
IC356 (1/2) NJM4558D
SIGNAL LEVEL DET
IC311
IC311 CXP80524-082Q (S) MECHANISM CONTROLLER
XTEST SERVO
Q318-321 PLUNGER SWITCH
Q904, 905 +5V REG.
Q902, 903 +6.5V REG.
IC901
OVER CURRENT LIMETER
Q929 POWER ON/OFF SWITCH
Q901, 906 -25V REG
Q920, 923, 922 924, 928 +12V REG.
Q921, 923, 925 -12 REG.
Q928 2SC3402 POWER ON/OFF SWITCH
Q921 2SK2460R SWITCH
RELAY
PRIMA
AC IN
AEP
US, Canadian Mo
IC307
CORRECTION
INTERFACE
LATION
ULATION
E DECODER


17
18
19
20
21
22
23
24
25
26
27
28
29
30
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
AY BOARD
ge 32)
CN571 17P
5 To CAPSTAN MOTOR ASSY (See page 33)
6 To DRUM DRIV BOARD CN08 (See page 34)
CN301 PH REO
CN508 30P
TE
SE
R386 150
IC311
IC311 CXP80524-082Q (S)
MECHANISM CONTROLLER
XTEST SERVO
XTEST MAIN
IC312
IC312 CXP80524-075Q (M)
MAIN CONTROLLER
RST
R401 47k
COAXIAL : 0
OPTICAL : 4.9
IC319
LOADING MOTOR DRIVE
IC319 M54641
IC320
CASETTE-CON MOTOR DRIVE
IC320 M54641
Q318 2SC3402
Q319 2SC3402
Q320 2SA1585S
Q321 2SC4115S
Q318-321 PLUNGER SWITCH
CN308 OR
To MOTOR BOARD CN03 (See page 32)
7
Q904,905 +5V REG.
Q902,903 +6.5V REG.
【RELAY BOARD】
CN903
CN 932
T 901
F901 2.5A
D905 RBA-406B
C909 1000μ 10V
IC901 (1/2) M5M4558
IC901 (2/2) M5M4558
C912 1000μ 25V
C907 4700μ 25V
Q929 POWER ON/OFF SWITCH
IC901
OVER CURRENT LIMETER
Q901,906 -25V REG
C913 220μ 35V
C914 220μ 35V
Q920 2SK2460R
Q924 2SB1261
Q928 2SC3402
POWER ON/OFF SWITCH
Q927 2SB1370
Q925 2SA1175
Q921 2SK2460R SWITCH
C921 4700μ 25V
【PRIMARY BOARD】
CN901
AC IN
L901
C903 0.0022μ 400V
C902 0.0022μ 400V
C904 0.0022μ 400V
C905 0.0022μ 400V
AEP Model
US, Canadian Model
IC317
IC317 (1/2) LM358P
DRUM PWM FILTER
IC316
Q302 2SD1387-34
IC316 (2/2) LM358P
CAPSTAN PWM FILTER
IC316 (1/2), Q302 CAPSTAN PWM DRIVER
IC318
IC318 (2/2) LM358P
Q333 2SB1370
Q334 2SA1115
Q335 2SC2603
Q333-335 REEL PWM DRIVER
FWD TORQUE
Q336 2SA1585A
Q337 2SA1585A
Q338 2SC4115S
Q339 2SC4115S
Q340 2SC2603
Q341 2SC2603
Q336 - 341 REEL DIRECTION SWITCH
IC317 (2/2) LM358P
AGC PWM FILTER
IC318 (1/2) LM358P
TENSHION PWM FILTER
Q342 2SD2061
TENSHION PWM DRIVER

4-9. IC BLOCK DIAGRAMS

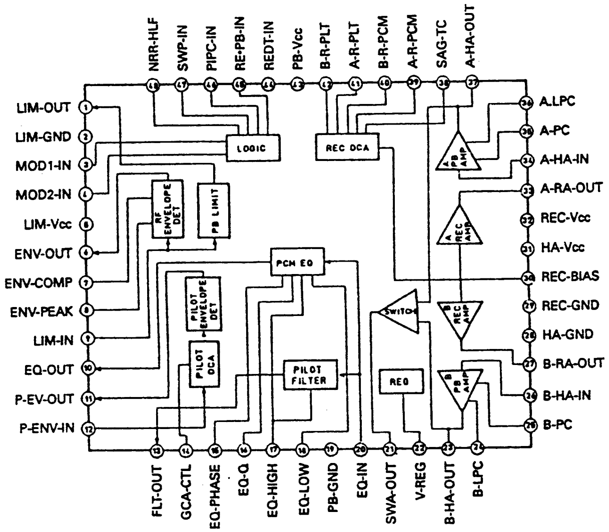
- **DRUM DRIVE BOARD**

IC01 CX20115A


CAP FG IN 2
NC
CAP FG IN 1
CAP AMP OUT
CAP LIM IN
CAP FG OUT 1
CAP FG OUT 2
CAPSTAN FG x 2 LOGIC
LIMITER
CAP FG COMPARATOR
CAF FG PREAMP
COMPARATOR
Vcc
REG
BUFFER
DRUM FG PREAMP
DRUM FG COMPARATOR
PG PREAMP
LEVEL SHIFT
PG COMPARATOR
DRUM COM
DRUM FG IN
DRUM FG OUT
DRUM PG IN
NC
PEAK HOLD
DRUM PG OUT
GND

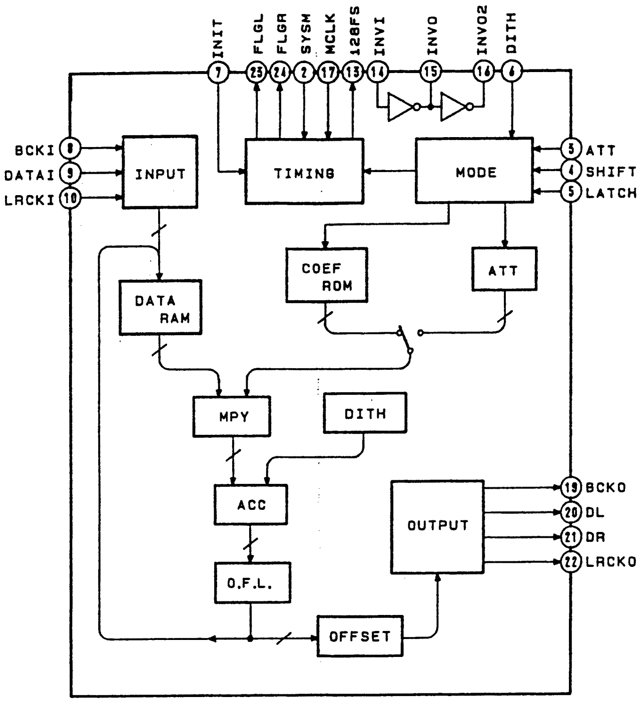
- **RF AMP BOARD**

IC1 CXA1364R

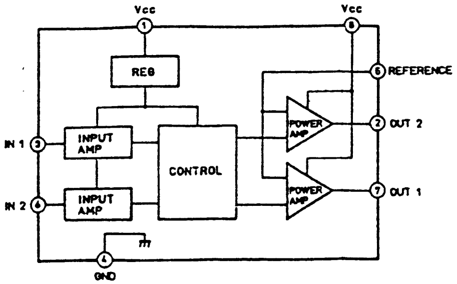

NRR-HLF
SWP-IN
PIPC-IN
RE-PB-IN
REDT-IN
PB-Vcc
B-R-PLT
A-R-PLT
B-R-PCM
A-R-PCM
SAG-TC
A-HA-OUT
LIM-OUT
LIM-GND
MOD1-IN
MOD2-IN
LIM-Vcc
ENV-OUT
ENV-COMP
ENV-PEAK
LIM-IN
EQ-OUT
P-EV-OUT
P-ENV-IN
A.LPC
A-PC
A-HA-IN
A-RA-OUT
REC-Vcc
HA-Vcc
REC-BIAS
REC-GND
HA-GND
B-RA-OUT
B-HA-IN
B-PC
FLT-OUT
GCA-CTL
EQ-PHASE
EQ-Q
EQ-HIGH
EQ-LOW
PB-GND
EQ-IN
SWA-OUT
V-REG
B-HA-OUT
B-LPC
LOGIC
REC DCA
RF ENVELOPE DET
PB LIMIT
PCM EQ
PILOT ENVELOPE DET
PILOT DCA
PILOT FILTER
SWITCH
REG
A PB AMP
A REC AMP
B REC AMP
B PB AMP

- **MAIN BOARD**

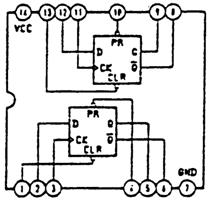
IC364 CXD2567M


INIT 7
FLGL 25
FLGR 24
SYSM 2
MCLK 17
128FS 13
INVI 14
INVO 15
INVO2 16
DITH 6
BCKI 8
DATAI 9
LRCKI 10
ATT 3
SHIFT 4
LATCH 5
INPUT
TIMING
MODE
COEF ROM
ATT
DATA RAM
MPY
DITH
ACC
O.F.L.
OFFSET
OUTPUT
19 BCKO
20 DL
21 DR
22 LRCKO

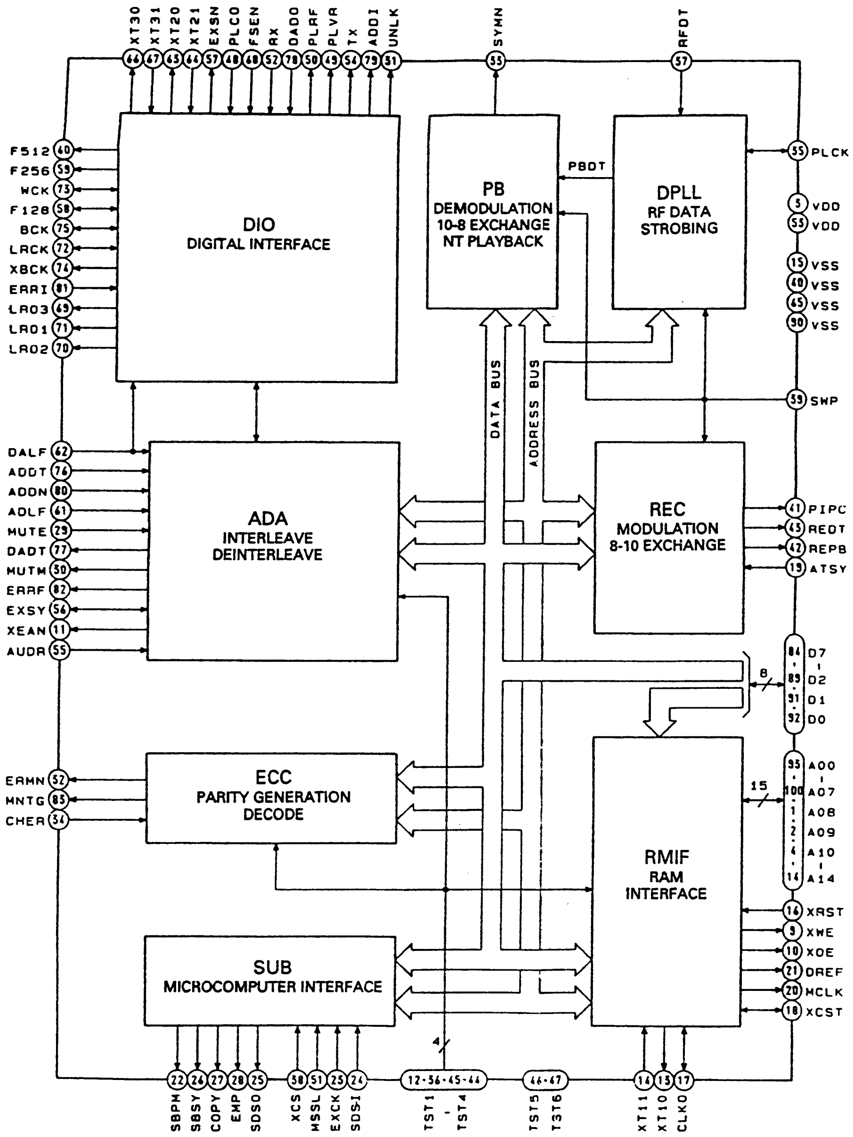
IC319,320 M54641L


Vcc
Vcc
REG
REFERENCE
OUT 2
OUT 1
IN 1
IN 2
INPUT AMP
INPUT AMP
CONTROL
POWER AMP
POWER AMP
GND

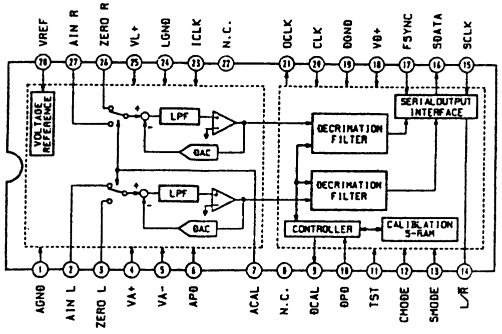
IC309 SN74HC74ANS


VCC
PR
D
CK
CLR
Q
Q̄
PR
D
CK
CLR
Q
Q̄
GND

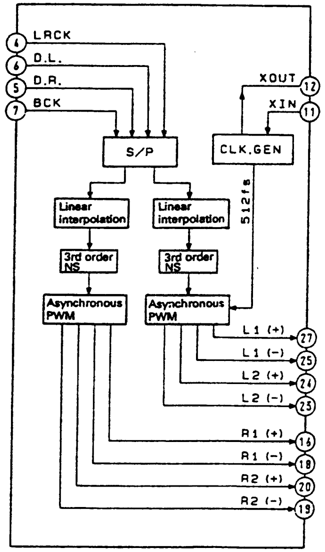
IC307 CXD2601AQ


XT30
XT31
XT20
XT21
EXSN
PLCO
FSEN
RX
DADO
PLRF
PLVR
TX
ADDI
UNLK
SYMN
RFDT
F512
F256
WCK
F128
BCK
LRCK
XBCK
ERRI
LRO3
LRO1
LRO2
DIO
DIGITAL INTERFACE
PB
DEMODULATION
10-8 EXCHANGE
NT PLAYBACK
PBDT
DPLL
RF DATA
STROBING
PLCK
VDD
VDD
VSS
VSS
VSS
VSS
DATA BUS
ADDRESS BUS
SWP
DALF
ADDT
ADDN
ADLF
MUTE
DADT
MUTM
ERRF
EXSY
XEAN
AUDR
ADA
INTERLEAVE
DEINTERLEAVE
REC
MODULATION
8-10 EXCHANGE
PIPC
REDT
REPB
ATSY
8
D7
D2
D1
D0
15
A00
A07
A08
A09
A10
A14
ERMN
MNTG
CHER
ECC
PARITY GENERATION
DECODE
RMIF
RAM
INTERFACE
XRST
XWE
XOE
DREF
MCLK
XCST
SUB
MICROCOMPUTER INTERFACE
4
12·36·45·44
46·47
SBPM
SBSY
COPY
EMP
SDSO
XCS
MSSL
EXCK
SDSI
TST1
TST4
TST5
TST6
XT11
XT10
CLKO

IC359 AK5339


VREF
AIN R
ZERO R
VL+
LGND
ICLK
N.C.
OCLK
CLK
DGND
VD+
FSYNC
SDATA
SCLK
28
27
26
25
24
23
22
21
20
19
18
17
16
15
VOLTAGE REFERENCE
LPF
DAC
LPF
DAC
DECRIMATION FILTER
DECRIMATION FILTER
SERIAL OUTPUT INTERFACE
CONTROLLER
CALIBLATION S-RAM
1
2
3
4
5
6
7
8
9
10
11
12
13
14
AGND
AIN L
ZERO L
VA+
VA-
APD
ACAL
N.C.
DCAL
DPD
TST
CMODE
SMODE
L/R

IC362 CXD2561M


LRCK
D.L.
D.R.
BCK
4
6
5
7
XOUT
XIN
12
11
S/P
CLK.GEN
512fs
Linear interpolation
Linear interpolation
3rd order NS
3rd order NS
Asynchronous PWM
Asynchronous PWM
L1 (+)
L1 (−)
L2 (+)
L2 (−)
R1 (+)
R1 (−)
R2 (+)
R2 (−)
27
25
24
23
16
18
20
19

4-10. PIN FUNCTIONS

IC307 DAT Signal Processor (CXD2601AQ)

This processor is an LSI to process recording and playback signals of the R-DAT system, in a single chip and provided with digital PLL, modem, error correction circuit, digital I/O, RAM control circuit, etc.

Pin No.	Pin Name	I/O	Description
1, 2	A08, A09	I/O	RAM address A08, A09
3	VDD	—	5 V
4-6	A10-A12	I/O	RAM address A10-A12
7, 8	A13, A14	O	RAM address A13, A14
9	XWE	O	RAM write enable signal
10	XOE	O	RAM output enable signal
11	XEAN	O	External addressing bus interrupt enable signal (Not in use)
12	TST1	I	Test pin (normally "L")
13	XT1O	O	18.816 MHz crystal oscillator output
14	XT1I	I	18.816 MHz crystal oscillator input
15	VSS	—	GND
16	XRST	I	Reset pin (normally"H")
17	CLKO	I/O	18.816 MHz clock output (Not in use)
18	XCST	I/O	SYEK (internal system clock) generation CLKO division timing signal (Not in use)
19	ATSY	I	ATF sync signal input
20	MCLK	O	9.408 MHz clock output
21	DREF	O	Drum servo reference signal
22	SBPM	O	Discrimination signal determining whether the subcode I/O clock (EXCK) is accepted ("L": accept, "H": ignore) (Not in use)
23	EXCK	I	Subcode I/O data transfer clock (DUTY50)
24	SDSI	I	Subcode serial data input
25	SDSO	O	Subcode serial data output
26	SBSY	O	Subcode I/O sync signal
27	COPY	O	Copy data output (Not in use)
28	EMP	O	Emphasis data output (Not in use)
29	MUTE	I	Mute pin
30	MUTM	O	Mute discrimination signal ("H": muted)
31	UNLK	O	RX PLL lock discrimination signal ("H": locked)
32	ERMN	O	Detects presence or absence of RF ("H": RF present, "L" during REC)
33	SYMN	O	C1 check result for RF ("H": OK) (Not in use)
34	CHER	I	Signal for discriminating whether C2 is 1 or 2 times (C2 → C1 → C2 or C1 → C2) ("H": 1 time, "L": 2 times) (Not in use)
35	PLCK	I/O	RF PLL clock output (Not in use)
36	TST2	I	Test pin (normally "L")
37	RFDT	I	RF signal input
38	XCS	I	Subcode I/O chip select ("L": select)
39	SWP	I	RF switching pulse ("L": A-CH, "H": B-CH)
40	VSS	—	GND
41	PIPC	O	REC data PILOT/PCM discrimination signal ("H": PILOT, during playback: always "L")
42	REPB	O	Record/playback switching signal ("H": record)
43	REDT	O	Recording signal output, fixed "L" during playback
44	TST4	I	Test pin (normally "L")
45	PDO	O	RX APLL PD output (comparator output)
46	AMPI	I	RX APLL oscillator cell amp input
47	AMPO	O	RX APLL oscillator cell amp inverted output
48	PLCO	I	RX APLL external VCO clock input

Pin No.	Pin Name	I/O	Description
49	PLVR	O	RX APLL comparison signal when external comparator is active (Vin) Not in use
50	PLVF	O	RX APLL comparison signal when external comparator is active (Rin) Not in use
51	MSSL	I	Master/slave setting ("H": master (fixed with the equipment), "L": slave)
52	RX	I	Digital input
53	VDD	—	5 V
54	TX	O	Digital output
55	AUDR	I	Audio mode/data recorder mode setting ("H": audio mode, "L": data recorder mode)
56	EXSY	I/O	Complete copy sync signal (25/3 - 100/3 Hz)
57	EXSN	I/O	Complete copy sync signal (25/3 - 100/3 Hz)
58	F128	I/O	128fsCK (normal)/256fsCK (×2) (DUTY50)
59	F256	O	256fsCK (normal)/512fsCK (×2) (DUTY50)
60	F512	O	512fsCK (normal)/512fsCK (×2) (DUTY50)
61	ADLF	I	Signal for discriminating whether ADDT serial data is MSB first or LSB first ("H": LSB first)
62	DALF	I	Signal for discriminating whether DADT serial data is MSB first or LSB first ("H": LSB first)
63	XT20	O	22.5792 MHz crystal oscillator output
64	XT21	I	22.5792 MHz crystal oscillator input
65	VSS	—	GND
66	XT30	O	49.152 MHz crystal oscillator output (24.576 MHz in B mode)
67	XT31	I	49.152 MHz crystal oscillator input (24.576 MHz in B mode)
68	FSEN	I	F128, BCK, LRCK input/output switch ("H": output)
69	LR03	O	LR02 inversion
70	LR02	O	LRCK 16BCK delay signal
71	LR01	O	LRCK 15BCK delay signal
72	LRCK	I/O	fs (normal)/2fs (×2) ("L": L-CH, "H": R-CH)
73	WCK	I/O	2fs (normal)/4fs (×2) (input mode only for testing)
74	XBCK	O	BCK inversion
75	BCK	I/O	64fs (normal)/128fs (×2)
76	ADDT	I	Serial AD data (complement of 2)
77	DADT	O	Serial DA data (complement of 2)
78	DADO	I	Digital output (DA) data input (normally connected to DADT)
79	ADDI	O	Digital input (AD) data output (normally connected to ADDN)
80	ADDN	I	Digital input (DA) data input
81	ERRI	I	Digital output V-FLAG data input (normally connected to ERRF)
82	ERRF	O	Signal output for discriminating whether or not DADT has interpolated data ("H": interpolated data)
83	MUTG	O	Error correction status monitor trigger
84-89	D7-D2	I/O	RAM data bus D7-D2
90	VSS	—	GND
91, 92	D1, D0	I/O	RAM data bus D1, D0
93-100	A00-A07	I/O	RAM address A00-A07

IC311 Mechanism/Servo Micon (CXP80524-073Q)

The mechanical deck servo systems are controlled by the captioned micon according to instructions from the main micon (IC312).

Pin No.	Pin Name	I/O	Connected to	Description
1		O		Not in use
2	$\overline{\text{BUSY}}$	O	Main Micon	Busy (Active "L") to the Main Micon
3		O		Not in use
4	REEL_CCW	O	Mechanism	Reel motor CCW ("L": RVS direction) }*1
5	REEL_CW	O	Mechanism	Reel motor CW ("H": FWD direction)
6	C_DIR_RVS	O	Mechanism	Capstan Direction ("L": FWD, "H": RVS)
7	PLN_ON	O	Mechanism	Plunger On
8	PLN_KICK	O	Mechanism	Plunger Kick
9	D_ON	O	Mechanism	Drum On ("H": The drum is revolving)
10	D_DIR_RVS	O	Mechanism	Not in use
11-16		O		Not in use
17	LE	O	Mechanism	Loading Motor Eject }*2
18	LL	O	Mechanism	Loading Motor Load
19	CAS_M_OUT	O	Mechanism	Cassette control motor Out }*3
20	CAS_M_IN	O	Mechanism	Cassette control motor In
21-24		—		Not in use
25	RE_FWD	I	Mechanism	Encoder SW2 }*4
26	RE_STOP	I	Mechanism	Encoder SW1
27-30	$\overline{\text{END\_LED\_ON}}$	O	Mechanism	End sensor ON Illuminated upon "L" (rectangular wave of about 500kHz). It is not output unless a cassette is mounted ("H").
31	MP	I		Microprocessor mode selected (the equipment is fixed at "L").
32	$\overline{\text{RST}}$	I		System Reset (low active)
33	Vss	—		Power terminal (GND)
34	XTAL	O		System Clock Output (Not in use)
35	EXTAL	I	CXD2601AQ	System Clock Input (9.408 MHz)
36-39		—		Not in use
40	X_SRV_REQ	I	Main Micon	Request for communication from the Main Micon
41	MAIN_DT_I	I	Main Micon	Serial Input from the Main Micon
42	MAIN_DT_O	O	Main Micon	Serial Output to the Main Micon
43	MAIN_CK	I	Main Micon	Serial Clock with the Main Micon
44	AVss	—		GND for A/D
45	AVref	—		Reference Voltage for A/D (+5 V)
46	AVdd	—		Power Supply for A/D (+5 V)
47	T_END	I	Mechanism	Take-up side end sensor input (analog) } Magnetic matter: 0V,
48	S_END	I	Mechanism	Supply side end sensor input (analog) Leader tape: AC (*5)
49	CAS_IN	I	Mechanism	Cassette-in switch (S01). "H": Cassette is mounted.
50	REC_EN	I	Mechanism	Rec-enable switch (S01). "H": REC enabled.
51	CAS_LCKed	I	Mechanism	Casecon locked Upon completion of loading: "H"
52	CAS_OUTed	I	Mechanism	Casecon outed Upon completion of loading OUT: "H"
53		I		Not in use
54	ATF_IN	I	RF Amp	ATF PILOT input
55	FG_T	I	Mechanism	Reel FG (T Side) } 6/24Hz (Small reel diameter) -
56	FG_S	I	Mechanism	Reel FG (S Side) 15/24Hz (Large reel diameter) (In SP FWD)
57	C_FG	I	Mechanism	Capstan FG SP: 674 Hz, LP: 337 Hz
58	D_FG	I	Mechanism	Drum FG 400 Hz: LP REC, 800 Hz: Other modes
59	D_PG	I	Mechanism	Drum PG } Other than LP REC: 800/24Hz
60	D_REF	I	CXD2601AQ	Drum Reference In LP REC: 400/24Hz

Pin No.	Pin Name	I/O	Connected to	Description
61	MST_CK	I	CXD2601AQ	Master clock (9.408MHz)
62	PB_DT	I	RF Amp	PB Data input to create ATF Sync
63	SWP	O	CXD2601AQ	Switching Pulse “L”: Ach, “H”: Bch
64	D_PWM	O	Mechanism	PWM Out for Drum
65	C_PWM	O	Mechanism	PWM Out for Capstan
66	PWM_R	O	Mechanism	PWM Out for Reel
67	TEN_PWM	O	Mechanism	PWM Out for Tension Regulator Plunger
68	AGC_PWM	O	RF Amp	PWM Out for AGC
69	SBSY	I	CXD2601AQ	↓ of subsync is detected (XINT2).
70	$\overline{\text{TEST}}$	I	Pull-up	Test Mode (active “L”)
71	POW_DN	I		Not in use
72	Vdd	—		Power terminal (+5 V)
73	Vss	—		Power terminal (GND)
74		—		Not in use
75	ATF_S2	O	CXD2601AQ	ATF Sampling Pulse
76-80		—		Not in use

* 1 Reel motor control

	CCW (counterclockwise)	CW (clockwise)
STOP (only in POWER ON)	L	L
FWD	L	H
RVS	H	L
Prohibit	H	H

*2 Loading motor control

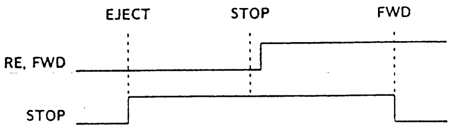
	LE	LL
—	L	L
LOAD	L	H
EJECT	H	L
Brake	H	H

*3 Casecon motor control

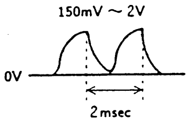
	OUT	IN
—	L	L
IN	L	H
OUT	H	L
Brake	H	H

*4 Encoder

RF-FWD	RE_STOP	Position
L	L	EJECT
L	H	STOP UNLD-STOP
H	L	FWD
H	H	STOP-FWD



*5 End sensor



With leader tape

IC312 Main Micon (CXP80524-075Q)

This Micon generally controls the operation of the equipment while exchanging data with the display micon (IC701) and mechanism/servo micon (IC311) in serial communications, including the DAT signal processor (IC307), digital filter (IC363) and other IC.

Pin No.	Pin Name	I/O	Connected to	Description
1		O		Not in use
2	$\overline{\text{L\_MUTE}}$	O	Line Out	Line Mute (Active “L”)
3		O		Not in use
4		O		Not in use
5	$\overline{\text{WRT}}$	O	Clock IC	Write request (Active “L”)
6	RD	O	Clock IC	Read request (Active “L”)
7-10	ADRS_3-0	O	Clock IC	Address 3-0 (Address BUS)
11-14	DATA_7-4	I/O		DATA 7-4 (DATA BUS). Not in use with the equipment
15-18	DATA_3-0	I/O	Clock IC	DATA 3-0 (DATA BUS)
19	$\overline{\text{ATT\_EXT}}$	O	CXD1136Q	Fade attenuator ck externally selected (Active “L”)
20	$\overline{\text{DIG}}$/ANA	O	CXD1136Q	Fade In/Out switching for DIG (“L”)/ANA (“H”)
21	$\overline{\text{REC}}$/PB	O	CXD1136Q	Fade In/Out REC switching for (“L”)/PB (“H”)
22	$\overline{\text{ATT\_CK}}$	O	CXD1136Q	Clock for fade In/Out
23	$\overline{\text{DTR}}$	O	CXD2601AQ	Audio use (“H”)/Data Recorder use (“L). Becomes “L” in after-recording and searching.
24	$\overline{\text{OPT}}$/COA	O	Digital I/O	Switching for Optical (“L”)/Coaxial (“H”)
25	FS32	O	1Bit DAC	“H” upon Fs = 32kHz. “L” for others.
26	$\overline{\text{RAM\_SEL}}$	O		Not in use
27	$\overline{\text{DISP\_REQ}}$	O	Display Micon	Request for communication with the Display Micon (“L” Active)
28	$\overline{\text{SD\_SEL}}$	O	CXD2601AQ	Request for communication with CXD2601 (“L” Active)
29	$\overline{\text{SRV\_REQ}}$	O	Mechanism Micon	Request for communication with the Mechanism Micon (“L” Active)
30	$\overline{\text{CLOCK\_SEL}}$	O	Clock IC	Clock IC chip selected
31	MP	I		Microprocessor mode selected (fixed at “L” with the equipment)
32	$\overline{\text{RST}}$	I		System Reset (“L” Active)
33	Vss	—		Power terminal (GND)
34	XTAL	O		System Clock Output (Not in use)
35	EXTAL	I	CXD2601AQ	System Clock Input (9.048 MHz)
36	$\overline{\text{DISP\_ACK}}$	I	Display Micon	ACKnowledge (Active “L”)
37	DISP_DT_I	I	Display Micon	Serial Input
38	DISP_DT_O	O	Display Micon	Serial Output
39	DISP_CK	I	Display Micon	Serial clock
40	$\overline{\text{SBSY}}$	I	CXD2601AQ	Subcode sync
41	SR_DT_IN	I	CXD2601AQ & Mechanism Micon	Serial Data In
42	SR_DT_OUT	O		Serial Data Out
43	$\overline{\text{SR\_CK}}$	I/O		Serial clock (In/Out) to Sub Code Interface
44	AVss	—		GND for A/D
45	AVref	—		Reference Voltage for A/D (+5 V)
46	AVdd	—		Power Supply for A/D (+5 V)
47		I		Not in use
48		I		Not in use
49	$\overline{\text{BUSY}}$	I	Mechanism Micon	Mechanism servo micon Busy (Active “L”)
50	AU_BUS_IN	I	Audio Bus	Not in use

Pin No.	Pin Name	I/O	Connected to	Description
51	TM_IN	I	Clock IC	TM_OUT for clock IC
52	MUT_MON	I	CXD2601AQ	Mute monitor (Active "H")
53	LVL_SYNC	I	Audio Block	Start ID is written by entering Level Sync Input audio.
54		I		Not in use
55	$\overline{\text{TRQ\_TEST}}$	I	Pull-up	Not in use
56	$\overline{\text{NO\_CAS\_TEST}}$	I	Pull-up	Not in use
57	TIME_$\overline{24}$/12	I	Pull-up	Time indication "H": 12 hours (AM, PM) "L": 24 hours display
58	DATE_ORDER	I	Pull-up	Order of DATA display "H": Year, month and day "L": Month, day and year
59-62	AF_3-0	I	Pull-up	Not in use
63		O	Pull-up	Not in use
64	$\overline{\text{L\_MUTE}}$	O		Line Mute (Active "L"). Not in use with the equipment (Not in use)
65	$\overline{\text{TR\_MUTE}}$	O	Line Out	Transistor Mute (Active "L")
66	MUTE_1136	O		Not in use
67	MUTE_2601	O	CXD2601AQ	Mute for CXD2601 (Active "H")
68	A_D_PWR_DWN	O	CS5339	A/D Converter Power Down Mode (Active "H"). The AD converter is turned OFF upon digital input/output.
69	ER_MON	I	CXD2601AQ	Error Monitor (Data Valid)
70	$\overline{\text{TEST}}$	I	Pull-up	Test Mode (Active "L")
71	POW_DN	I	+5 V	Not in use
72	Vdd	—		Power terminal (+5V)
73	Vss	—		Power terminal (GND)
74		—		Not in use
75	D_F_ATT	O	CXD2560M	Communication line (Serial Data) with Digital Filter
76	D_F_$\overline{\text{SHIFT}}$	O	CXD2560M	Communication line with Digital Filter (Shift Clock; shifted by ↓ and taken in by ↑)
77	D_F_$\overline{\text{LATCH}}$	O	CXD2560M	Communication line (Latch Pulse) with Digital Filter
78, 79	MODE2, 1	O		Mode Control of the RF amplifier (Not in use)
80		O		Not in use

IC362 Pulse D/A Converter (CXD2561M-1)

The Converter is a small, high-performance 1 bit pulse D/A converter that provides 4 asymmetrical PWM wave outputs in each ch of L/R.

Pin No.	Pin Name	I/O	Description
1	DVDD	—	Digital power supply
2	TEST	I	Test terminal. Normally fixed at "L."
3	INIT	I	Again synchronized at the buildup edge of the signal.
4	LRCKI	I	LRCK input
5	DRI	I	Rch data input
6	DLI	I	Lch data input
7	BCKI	I	BCK input
8	DVss	—	Digital GND
9	512Fs	O	512Fs output
10	XVss	—	Clock GND
11	XIN	I	X'tal oscillator input terminal (512Fs)
12	XOUT	O	X'tal oscillator output terminal
13	XVDD	—	Clock power supply
14	VSUB	—	Substrate. Connected to GND.
15	AVDDR	—	Analog power supply
16	R1 (+)	O	Rch PLM output 1 (normal phase)
17	AVssR	—	Analog GND
18	R1 (–)	O	Rch PLM output 1 (reverse phase)
19	R2 (+)	O	Rch PLM output 2 (normal phase)
20	R2 (–)	O	Rch PLM output 2 (reverse phase)
21	AVDD	—	Analog power supply
22	AVss	—	Analog GND
23	L2 (–)	O	Lch PLM output 2 (reverse phase)
24	L2 (+)	O	Lch PLM output 2 (normal phase)
25	L1 (–)	O	Lch PLM output 1 (reverse phase)
26	AVssL	—	Analog GND
27	L1 (+)	O	Lch PLM output 1 (normal phase)
28	AVDDL	—	Analog power supply

IC701 Display Micon (CXP5058H-660Q)

The Micon controls key input, FL tube display, remote control signal input, level meter (IC702) and EEP-ROM (IC703) according to instructions from the Main Micon (IC312).

Pin No.	Pin Name	I/O	Connected to	Description
1-18	e_-v_SEG	O	FL tube FL701	FL Segment 'e'-'v'
19-28	10_-1_G	O	FL tube FL701	FL Grid #10-#1
29	DSP_REQ	I	MAIN Micon	Communication request ("L" Active)
30	XTAL	—	Ceramic oscillator	
31	EXTAL	I	Ceramic oscillator	4.19MHz ceramic oscillator
32	RST	I		System Reset ("L" active)
33	NC	—		Not in use
34	Vdd	I		Power terminal (+5 V)
35-42	AD_0-7	I	Panel switch	Key input A/D converter input #0 - #7
43	NC	—		Not in use
44	DISP_CK	O	MAIN Micon	Shift clock
45	SO	O	MAIN Micon	Serial data OUT
46	SI	I	MAIN Micon	Serial data IN
47	DSP_ACK	O	MAIN Micon	Acknowledge (Active"L")
48	REC_MODE	I	S703	REC MODE "H": Standard, "L": Long
49	TEST	I	Pull-down	Test mode (Active "L")
50	CLOCK_SET	I		Not in use
51-54	LVL_DT_0-3	I/O	Level Meter IC	Level Meter Data 0-3
55, 56	LVL_ADRS_0, 1	O	Level Meter IC	Level Meter Data 0, 1
57	LVL_RD	O	Level Meter IC	Level Meter Read Mode (Active "L")
58	LVL_WR	O	Level Meter IC	Level Meter Write Mode (Active "L")
59	LVL_SEL	O	Level Meter IC	Level Meter IC Select (Active "L")
60	RM_SEL	O	Open	External remote controller selected (not in use)
61	PY2	I	Pull-up	Not in use
62	RMC	I	Open	Not in use
63	RMC_CAT	I	Pull-down	Remote control category "L": DAT1, "H": DAT2. Fixed at "L" with the equipment.
64	TR_MUTE	I	IC431	Level meter mute (Active "L")
65	BUSY	I	EEPROM	BUSY signal (Active "L")
66	ROM_DT_IN	I	EEPROM	Data input
67	ROM_DT_OUT	O	EEPROM	Data output
68	SHIFT_CK	O	EEPROM	Shift clock
69	CE	O	EEPROM	Chip enable
70	DTC/XPCM	I	Pull-up	Equipment model discrimination input. Fixed at "H" with the equipment
71	Vss	I		Power terminal (GND)
72	TX	—	Open	Not in use
73	NC	—	Open	Not in use
74	TEX	—	+5 V	Not in use
75	Vref	I	+5 V	Analog board reference voltage
76	Vfdp	I	-25 V	FL display tube driving voltage
77-80	a_-d_SEG	O	FL tube	FL Segment 'a'-'d'

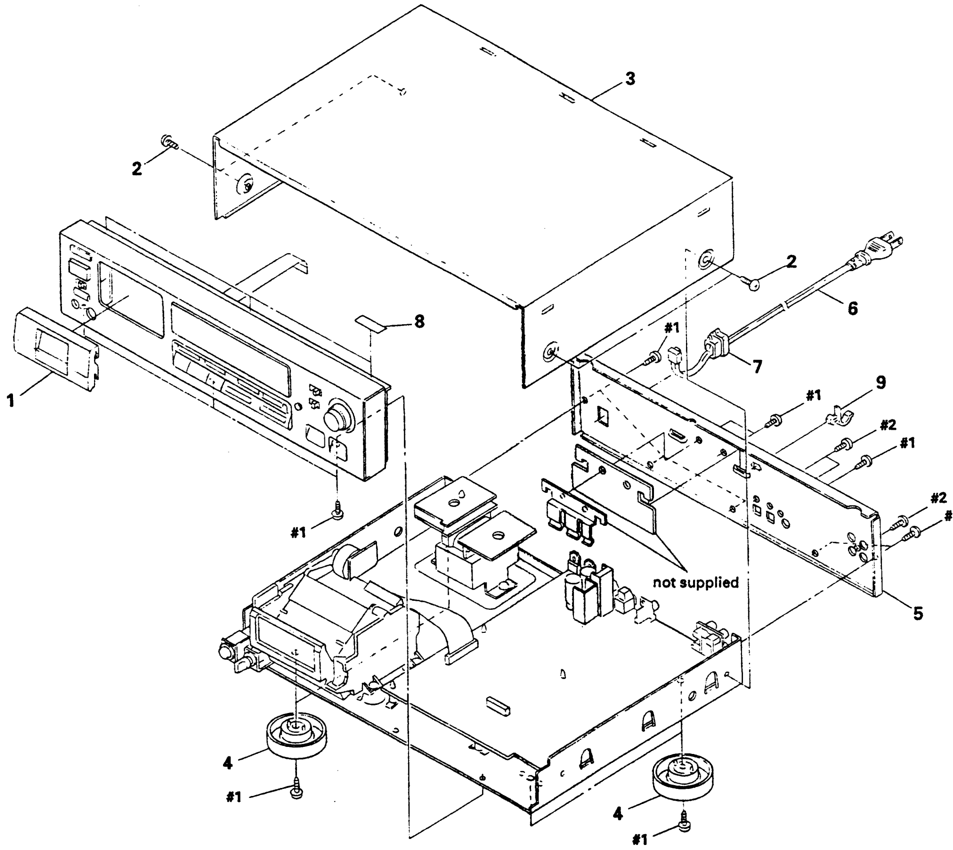
SECTION 5
EXPLODED VIEWS

NOTE:
- –XX, –X mean standardized parts, so they may have some differences from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB,BALANCE(WHITE)...(RED)
  ↑ ↑
  Parts color Cabinet's color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware(# mark) list is given in the last of this parts list.
- G : Germany model

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

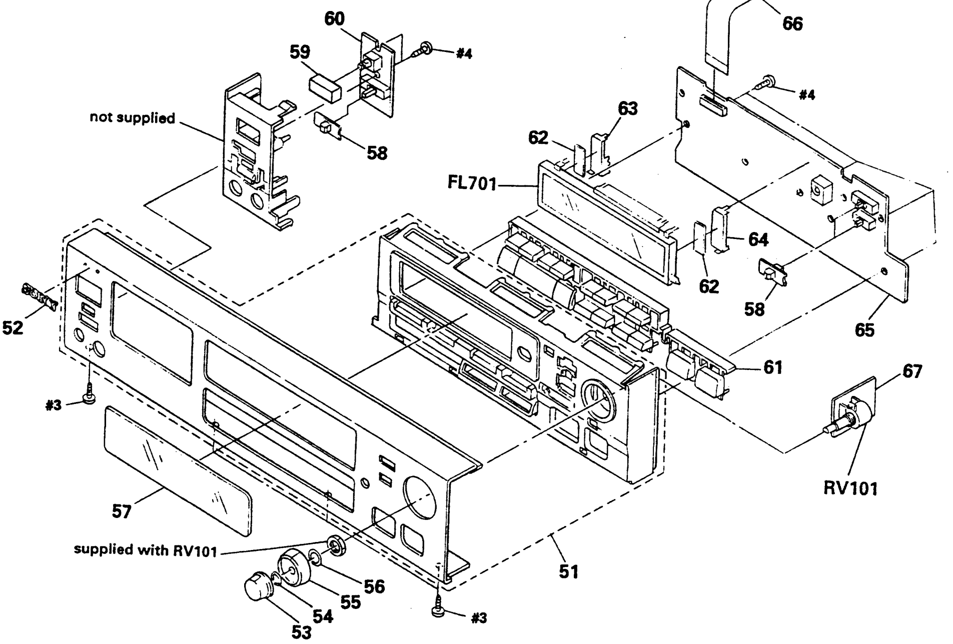
5-1. CABINET SECTION



Ref. No.	Part No.	Description	Remarks
1	X-3366-266-2	PANEL (CASSETTE) ASSY	
2	3-704-366-01	SCREW (CASE) (M3X8)	
* 3	4-934-008-21	CASE	
4	4-956-885-11	FOOT (F58175S2W)	
* 5	3-384-040-12	PANEL, BACK (US, Canadian)	
* 5	3-384-040-22	PANEL, BACK (AEP)	
* 5	3-384-040-31	PANEL, BACK (UK)	

Ref. No.	Part No.	Description	Remarks
⚠6	1-575-651-21	CORD, POWER (AEP)	
⚠6	1-590-836-11	CORD, POWER (US, Canadian)	
⚠6	1-696-586-11	CORD, POWER (UK)	
* 7	3-703-244-00	BUSHING (2104), CORD	
8	3-831-441-XX	CUSHION, SPEAKER	
* 9	4-949-235-01	HOOK	

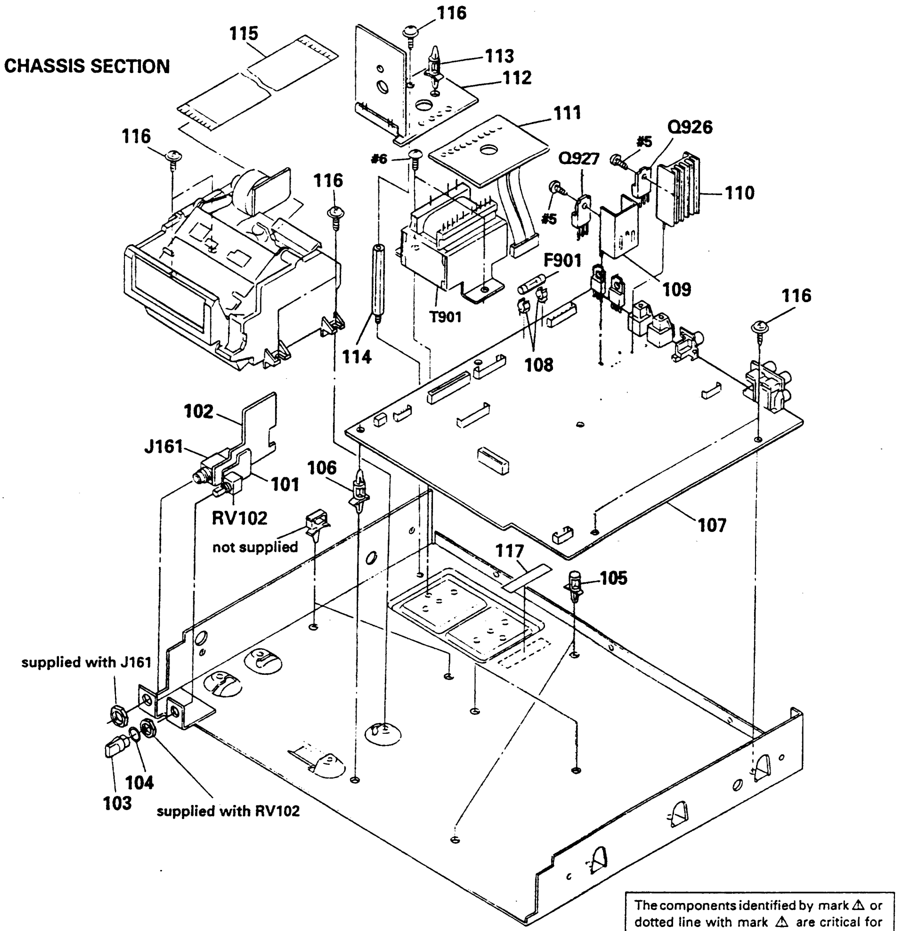
5-2. FRONT PANEL SECTION


60
59
#4
not supplied
58
66
63
#4
62
FL701
64
62
58
65
52
61
67
#3
57
RV101
supplied with RV101
56
55
54
53
#3
51

Ref. No.	Part No.	Description	Remarks
51	A-2004-170-A	PANEL ASSY, FRONT (US, Canadian)	
51	A-2004-249-A	PANEL ASSY, FRONT (AEP, UK)	
52	4-942-568-01	EMBLEM (NO. 5), SONY	
53	3-382-635-01	KNOB (REC-R)	
54	3-356-957-01	SPRING	
55	3-382-634-01	KNOB (REC-L)	
56	3-382-627-01	SPRING, RING	
57	3-386-572-01	WINDOW (FL TUBE)	
58	3-382-651-01	KNOB	
59	4-922-921-01	BUTTON (POWER)	

Ref. No.	Part No.	Description	Remarks
* 60	1-647-403-11	POWER SW BOARD	
61	3-386-568-01	BUTTON	
62	9-911-839-XX	CUSHION	
* 63	4-922-524-01	HOLDER (LEFT)	
* 64	4-922-523-01	HOLDER (RIGHT)	
* 65	A-2006-879-A	DISPLAY BOARD, COMPLETE	
66	1-751-031-11	WIRE (FLAT TYPE) (17 CORE)	
* 67	1-647-404-11	REC VOL BOARD	
FL701	1-517-111-11	INDICATOR TUBE, FLUORESCENT	
RV101	1-241-937-11	RES, VAR, CARBON 20K/20K (REC LEVEL)	

5-3. CHASSIS SECTION


116
115
113
112
111
116
Q926
#6
Q927
#5
110
116
#5
F901
109
116
T901
114
108
102
J161
101
106
RV102
not supplied
107
117
105
supplied with J161
104
103
supplied with RV102

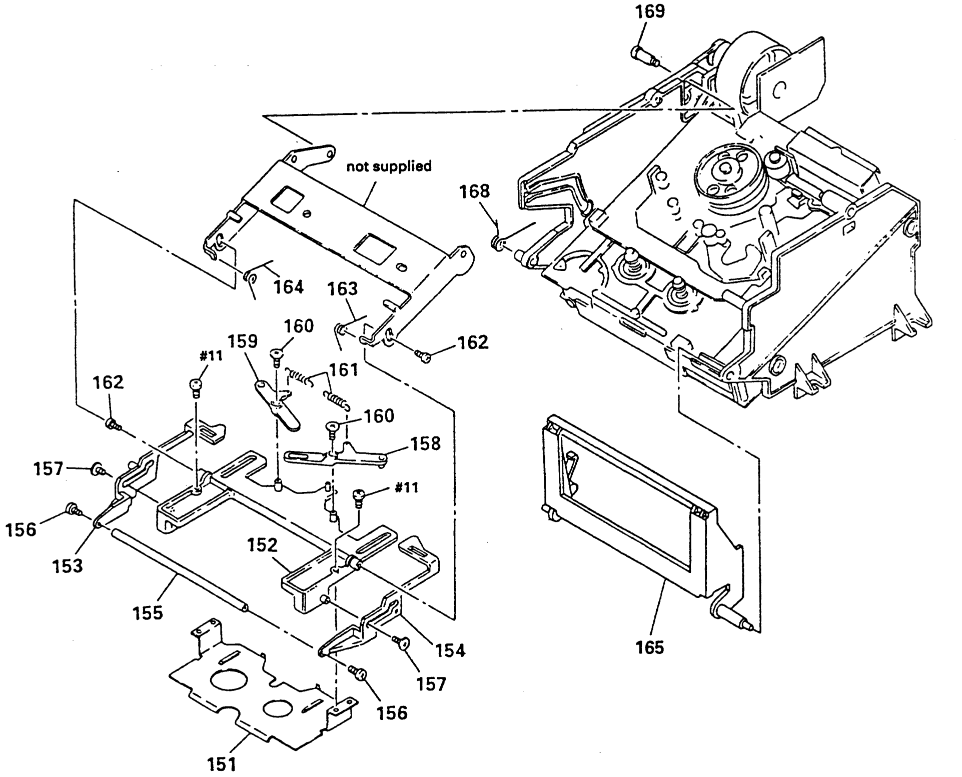
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remarks
* 101	1-647-406-11	HEADPHONE VOL BOARD	
* 102	1-647-405-11	HEADPHONE JACK BOARD	
103	3-354-931-01	KNOB (DIA. 10)	
104	3-356-957-01	SPRING (SUS), RING	
* 105	3-670-570-00	SPACER, SUPPORT	
106	4-924-098-01	HOLDER, PC BOARD	
* 107	A-2006-882-A	MAIN BOARD, COMPLETE	
* 108	1-533-213-31	HOLDER, FUSE	
* 109	4-880-403-11	HEAT SINK	
* 110	4-363-146-71	HEAT SINK, V. OUT	
* 111	1-647-409-11	POWER RELAY BOARD	

Ref. No.	Part No.	Description	Remarks
* 112	1-647-408-11	PRIMARY BOARD	
* 113	3-346-265-11	HOLDER, PC BOARD	
* 114	3-387-146-02	SUPPORT (TRANSFORMER)	
115	1-590-915-11	WIRE, FLAT TYPE (30 CORE)	
116	4-886-821-11	SCREW, S TIGHT, +PTTWH 3X6	
117	3-703-044-26	LABEL, CAUTION (US, Canadian)	
⚠F901	1-532-286-11	FUSE, TIME-LAG (AEP, UK)	
⚠F901	1-532-744-11	FUSE, GLASS TUBE (US, Canadian)	
J161	1-565-327-11	JACK, LARGE TYPE 1P (HEADPHONES)	
RV102	1-241-537-11	RES, VAR, CARBON 20K/20K (HEADPHONES LEVEL)	
⚠T901	1-423-558-11	TRANSFORMER, POWER (US, Canadian)	
⚠T901	1-423-559-11	TRANSFORMER, POWER (AEP, UK)	

5-4. MECHANISM SECTION 1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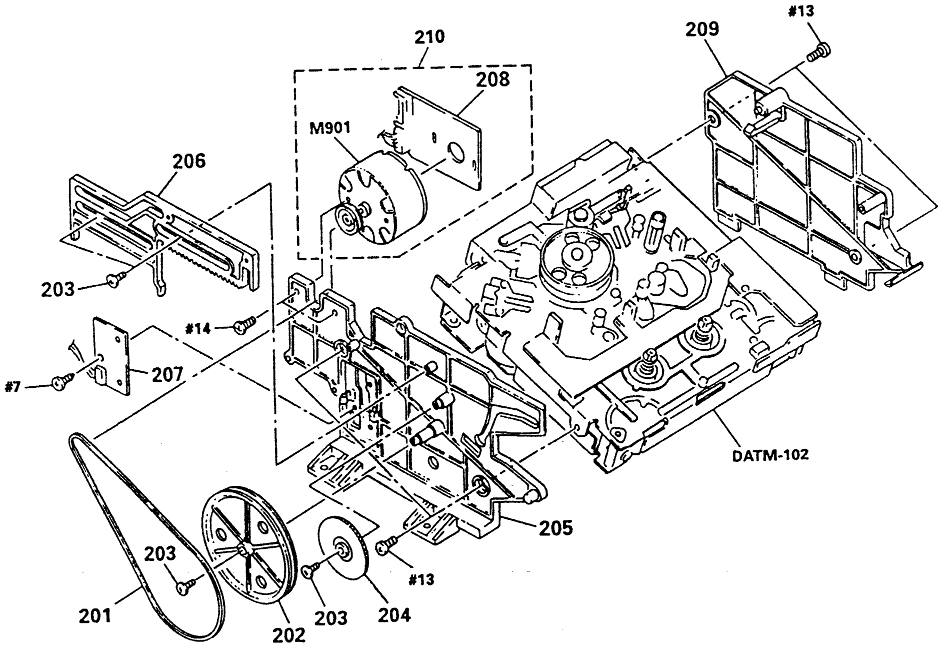
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
151	3-373-224-01	HOLDER (LOWER)		160	2-623-756-01	SCREW, (B1.7X3), TAPPING	
152	3-373-237-03	HOLDER (UPPER), CASSETTE		161	3-632-859-00	SPRING, BRAKE LEVER RETURN	
153	3-373-223-01	SLIDER (L)		162	3-318-203-61	SCREW (B1.7X4), TAPPING	
154	3-373-222-01	SLIDER (R)		163	3-373-215-01	SPRING (R), TORSION	
* 155	3-373-217-01	SHAFT (JOINT)		164	3-373-216-01	SPRING (L), TORSION	
156	3-345-648-01	SCREW (M1.4X3.0), TOOTHED LOCK		165	3-382-648-01	HOLDER (WINDOW)	
157	3-318-201-11	SCREW (B) (1.4X3), TAPPING		168	3-373-212-01	SPRING (CASSETTE)	
158	3-373-218-01	LEVER (R)		169	4-931-471-01	SCREW (STEP)	
159	3-373-219-01	LEVER (L)					

5-5. MECHANISM SECTION 2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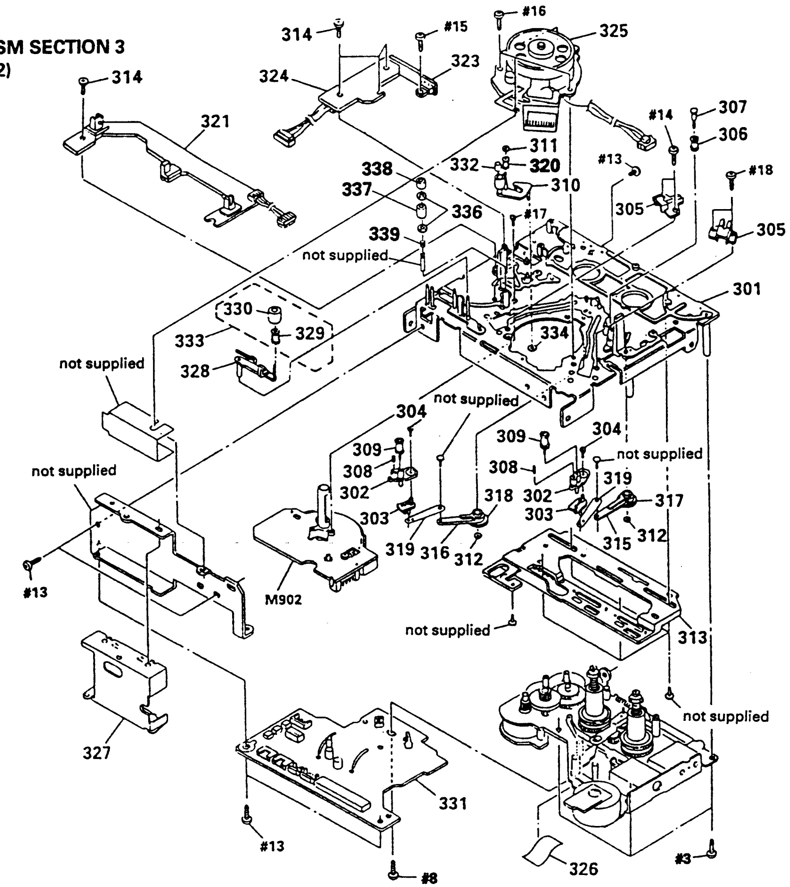
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
201	4-931-470-01	BELT (DRIVING)		* 207	1-641-487-11	SW BOARD	
202	3-373-214-01	PULLEY		* 208	1-641-486-11	MOTOR BOARD	
203	2-623-756-01	SCREW, (B1.7X3), TAPPING		* 209	3-373-235-01	CHASSIS (R)	
204	3-373-213-01	GEAR, DRIVING		210	A-2003-910-A	MOTOR ASSY, CASSETTE	
205	3-373-234-01	CHASSIS (L)		M901	1-541-632-11	MOTOR, DC	
206	3-373-221-01	SLIDER (RACK)					

5-6. MECHANISM SECTION 3
(DATM-102)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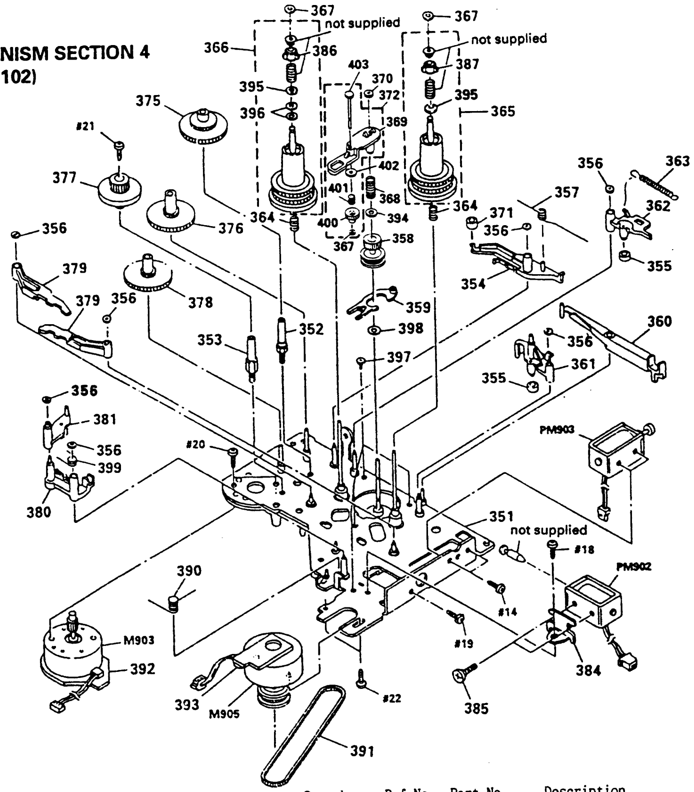
Ref. No.	Part No.	Description	Remarks
* 301	3-368-462-04	CHASSIS (OUTSERT), MECHANICAL	
* 302	3-368-390-01	BASE (#1 GUIDE)	
303	3-368-409-01	JOINT (#1 GUIDE)	
304	3-368-413-01	SCREW (1.4), +P TAPPING (B)	
* 305	3-368-442-01	CATCHER	
306	3-368-399-01	GUIDE, ROLLER	
307	3-368-428-01	SHAFT (ROLLER GUIDE)	
308	3-368-436-01	SPRING (#1 GUIDE), COMPRESSION	
309	X-3337-643-1	GUIDE (RIC) ASSY, ROLLER	
310	X-3363-025-1	PINCH LEVER ASSY	
311	3-315-384-31	WASHER, STOPPER	
312	3-368-398-01	BUSHING	
* 313	A-2003-708-A	SLIDER ASSY, CAM	
314	3-372-761-01	SCREW (M1.7X4), TAPPING	
315	3-368-427-01	LEVER (LOAD-T)	
316	3-368-426-01	LEVER (LOAD-S)	
317	3-368-444-01	GEAR (LOAD-T)	
318	3-368-443-01	GEAR (LOAD-S)	
319	3-368-415-01	SHAFT (LOAD LEVER JOINT)	

Ref. No.	Part No.	Description	Remarks
320	3-384-243-01	GUIDE (T3), ROLLER	
* 321	1-639-305-11	TOP END SENSOR BOARD	
* 323	1-639-301-11	RGN SW BOARD	
* 324	1-639-306-11	CAM SLIDER BOARD	
325	8-848-567-11	DRUM ASSY DOU-03A	
326	9-911-835-XX	SPACER	
* 327	A-2001-587-A	RF COMPLETE ASSY	
328	3-368-459-01	LEVER (CLEANER)	
329	3-353-812-01	COLLAR (ROLLER)	
330	3-352-518-01	ROLLER (CLEANER)	
* 331	A-2056-488-A	DRUM DRIVE BOARD, COMPLETE	
332	3-337-626-01	CAP, PINCH ROLLER	
333	X-3337-655-1	ROLLER (CLEANER) ASSY	
334	3-321-813-01	WASHER, COTTER POLYETHYLENE	
336	3-337-677-01	FLANGE	
337	3-337-676-01	GUIDE, FIXED	
338	3-337-605-01	NUT, ADJUSTMENT	
339	3-389-294-01	SPRING (T2 300G), COMPRESSION)	
M902	8-835-361-01	MOTOR, DC U-17B (CAPSTAN)	

5-7. MECHANISM SECTION 4
(DATM-102)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Ref. No.	Part No.	Description	Remarks
* 351	A-2003-857-A	CHASSIS (REEL) ASSY	
352	3-368-420-04	SHAFT (CAM DRIVE GEAR C)	
353	3-368-419-04	SHAFT (CAM DRIVE GEAR D)	
* 354	3-368-455-01	LEVER (GEAR LOCK)	
355	3-368-418-01	TUBE (BREAK)	
356	3-368-398-01	BUSHING	
357	3-368-430-01	SPRING (GEAR LOCK)	
358	X-3363-022-1	GEAR (REEL DRIVE) ASSY	
* 359	3-368-411-01	SLIDER (REEL LOCK)	
* 360	3-368-453-01	LEVER (BRAKE SOLENOID)	
* 361	3-368-447-01	LEVER (BRAKE S)	
* 362	3-368-446-01	LEVER (BRAKE T)	
363	3-368-438-01	SPRING (BREAK), TENSION	
364	3-368-432-01	SPRING (FF/REW), COMPRESSION	
365	A-2003-709-A	TABLE (S) ASSY, REEL	
366	A-2003-710-B	TABLE (T) ASSY, REEL	
367	3-578-224-00	WASHER	
368	3-368-435-01	SPRING (FR LEVER), COMPRESSION	
369	3-368-450-01	LEVER (F/R)	
370	3-315-384-31	WASHER, STOPPER	
371	3-377-332-01	TUBE (BREAK2)	
372	X-3364-581-2	LEVER (F/R) ASSY	
375	3-368-421-01	GEAR (CAM DRIVE C)	
376	3-373-039-01	GEAR (CAM DRIVE B)	
377	3-368-403-01	GEAR (CAM DRIVE D)	
378	3-368-402-01	GEAR (CAM DRIVE A, B)	

Ref. No.	Part No.	Description	Remarks
379	X-3363-024-1	LEVER (BT) ASSY	
* 380	3-368-451-01	LEVER (BT SOLENOID)	
* 381	3-368-454-01	LEVER (BT SELECTION)	
* 384	3-368-416-01	BRACKET (B.T SOLENOID)	
385	3-368-423-01	SCREW (M2.6), STEP	
386	2-623-736-01	CLAW (C) (LEFT), REEL	
387	2-623-752-01	CLAW (C) (RIGHT), REEL	
390	3-368-431-01	SPRING (B.T SOLENOID)	
391	3-368-417-01	BELT (170TN10-1.0T), TIMING	
* 392	1-639-303-11	CAM MOTOR BOARD	
* 393	1-639-304-11	REEL MOTOR BOARD	
394	3-368-422-11	POLY-SLIDER(DIA. 5.5-DIA. 1.5)	
395	3-701-443-11	WASHER	
396	3-701-443-21	WASHER, 5 DIA.	
397	2-623-756-01	SCREW, (B1.7X3), TAPPING	
398	3-701-436-01	WASHER, 1.6	
399	3-383-478-01	SPRING (B.T LEVER RETURN)	
400	3-368-406-01	GEAR (GOOSENECK)	
401	3-368-437-01	SPRING(GEAR NECK), COMPRESSION	
402	3-368-422-01	POLY-SLIDER(DIA. 5.5-DIA. 1.5)	
403	3-375-210-01	SHAFT (GOOSENECK GEAR)	
M903	X-3363-109-1	MOTOR (CAM) ASSY	
M905	X-3363-110-2	MOTOR (REEL) ASSY	
PM902	1-454-536-11	SOLENOID, PLUNGER (BT CONTROL)	
PM903	1-454-535-11	SOLENOID, PLUNGER (BRAKE)	

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE : Metal Oxide-film resistor
  F : nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : μ, for example :
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF :μF
- COILS
  uH : μH

CAM MOTOR | CAM SLIDER | DISPLAY

Ref. No.	Part No.	Description	Remarks
*	1-639-303-11	CAM MOTOR BOARD	
		***************	
		< CAPACITOR >	
C06	1-163-077-00	CERAMIC CHIP 0.1uF 10% 25V	
**			
*	1-639-306-11	CAM SLIDER BOARD	
		***************	
		< JUMPER RESISTOR >	
JW04	1-216-296-00	METAL CHIP 0 5% 1/8W	
JW05	1-216-296-00	METAL CHIP 0 5% 1/8W	
		< SWITCH >	
SW1	1-570-953-11	SWITCH, PUSH (1 KEY) (STOP DET)	
SW2	1-570-953-11	SWITCH, PUSH (1 KEY) (FWD DET)	
**			
*	A-2006-879-A	DISPLAY BOARD, COMPLETE	
		************************	
		< CAPACITOR >	
C701	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C702	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C703	1-124-584-00	ELECT 100uF 20% 10V	
C704	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C705	1-161-379-00	CERAMIC 0.01uF 20% 25V	
C706	1-161-379-00	CERAMIC 0.01uF 20% 25V	
		< CONNECTOR >	
CN751	1-568-860-11	SOCKET, CONNECTOR 17P	
		< CONPOSITION CIRCUIT BLOCK >	
CP701	1-239-598-11	COMPOSITION CIRCUIT BLOCK	
CP702	1-239-598-11	COMPOSITION CIRCUIT BLOCK	
CP703	1-239-598-11	COMPOSITION CIRCUIT BLOCK	
CP704	1-239-598-11	COMPOSITION CIRCUIT BLOCK	

Ref. No.	Part No.	Description	Remarks
		< FILTER >	
FL701	1-517-111-11	INDICATOR TUBE, FLUORESCENT	
		< IC >	
IC701	8-752-840-79	IC CXP5058H-660Q	
IC702	8-759-995-09	IC MSM6338RS	
IC703	8-752-330-61	IC CXK1013P	
IC704	8-749-922-36	IC GP1U50XB	
		< TRANSISTOR >	
Q701	8-729-902-11	TRANSISTOR 2SC2021	
Q702	8-729-902-11	TRANSISTOR 2SC2021	
Q703	8-729-900-45	TRANSISTOR DTC114EF	
		< RESISTOR >	
R701	1-249-441-11	CARBON 100K 5% 1/4W	
R702	1-249-441-11	CARBON 100K 5% 1/4W	
R706	1-249-427-11	CARBON 6.8K 5% 1/4W	
R707	1-249-432-11	CARBON 18K 5% 1/4W	
R713	1-249-429-11	CARBON 10K 5% 1/4W	
R721	1-249-429-11	CARBON 10K 5% 1/4W	
R726	1-249-429-11	CARBON 10K 5% 1/4W	
R727	1-249-422-11	CARBON 2.7K 5% 1/4W	
R728	1-249-424-11	CARBON 3.9K 5% 1/4W	
R729	1-249-427-11	CARBON 6.8K 5% 1/4W	
R730	1-249-432-11	CARBON 18K 5% 1/4W	
R731	1-249-429-11	CARBON 10K 5% 1/4W	
R732	1-249-422-11	CARBON 2.7K 5% 1/4W	
R733	1-249-424-11	CARBON 3.9K 5% 1/4W	
R734	1-249-429-11	CARBON 10K 5% 1/4W	
R735	1-249-422-11	CARBON 2.7K 5% 1/4W	
R736	1-249-424-11	CARBON 3.9K 5% 1/4W	
R737	1-249-427-11	CARBON 6.8K 5% 1/4W	
R738	1-249-432-11	CARBON 18K 5% 1/4W	
R739	1-249-429-11	CARBON 10K 5% 1/4W	
R740	1-249-422-11	CARBON 2.7K 5% 1/4W	
R741	1-249-424-11	CARBON 3.9K 5% 1/4W	

DISPLAY | POWER SW | REC VOL | HEADPHONE JACK | HEADPHONE VOL

Ref. No.	Part No.	Description	Remarks
R742	1-249-427-11	CARBON 6.8K 5% 1/4W	
R743	1-249-432-11	CARBON 18K 5% 1/4W	
R744	1-249-437-11	CARBON 47K 5% 1/4W	
R745	1-249-437-11	CARBON 47K 5% 1/4W	
R746	1-249-437-11	CARBON 47K 5% 1/4W	
R747	1-249-437-11	CARBON 47K 5% 1/4W	
R750	1-249-437-11	CARBON 47K 5% 1/4W	
R755	1-249-437-11	CARBON 47K 5% 1/4W	
R758	1-249-409-11	CARBON 220 5% 1/4W	
R791	1-247-752-11	CARBON 1K 5% 1/2W	
R799	1-249-429-11	CARBON 10K 5% 1/4W	
		< SWITCH >	
S703	1-571-520-11	SWITCH, SLIDE (INPUT ANALOG-OPT-COAXIAL)	
S704	1-554-303-21	SWITCH, TACTILE (COUNTER MODE)	
S705	1-570-974-11	SWITCH, SLIDE (REC MODE)	
S723	1-554-303-21	SWITCH, TACTILE (START ID AUTO)	
S724	1-554-303-21	SWITCH, TACTILE (START ID RENUMBER)	
S725	1-554-303-21	SWITCH, TACTILE (START ID WRITE)	
S726	1-554-303-21	SWITCH, TACTILE (START ID ERASE)	
S727	1-554-303-21	SWITCH, TACTILE (END ID WRITE)	
S728	1-554-303-21	SWITCH, TACTILE (SKIP ID WRITE)	
S729	1-554-303-21	SWITCH, TACTILE (SKIP ID ERASE)	
S730	1-554-303-21	SWITCH, TACTILE (END ID ERASE)	
S731	1-554-303-21	SWITCH, TACTILE (■)	
S732	1-554-303-21	SWITCH, TACTILE (▶)	
S733	1-554-303-21	SWITCH, TACTILE (▯◁◁ AMS)	
S734	1-554-303-21	SWITCH, TACTILE (▷▷▯ AMS)	
S735	1-554-303-21	SWITCH, TACTILE (◀◀)	
S736	1-554-303-21	SWITCH, TACTILE (▶▶)	
S737	1-554-303-21	SWITCH, TACTILE (● REC)	
S738	1-554-303-21	SWITCH, TACTILE (❚❚ PAUSE)	
S739	1-554-303-21	SWITCH, TACTILE (REC MUTE)	
		< VIBRATOR >	
X701	1-577-359-21	VIBRATOR, CERAMIC (4.19MHz)	
**			
*	1-647-403-11	POWER SW BOARD	
		**************	
		< RESISTOR >	
R704	1-247-858-11	CARBON 13K 5% 1/4W	
R705	1-249-432-11	CARBON 18K 5% 1/4W	
		< SWITCH >	
S701	1-571-520-11	SWITCH, SLIDE (TIMER PLAY-OFF-REC)	
S702	1-554-303-21	SWITCH, TACTILE (OPEN/CLOSE ⏏)	
S740	1-554-118-00	SWITCH, PUSH (1 KEY) (POWER)	
**			

Ref. No.	Part No.	Description	Remarks
*	1-647-404-11	REC VOL BOARD	
		*************	
		< CONNECTOR >	
* CN102	1-564-708-11	PIN, CONNECTOR (SMALL TYPE) 6P	
		< RESISTOR >	
R101	1-249-434-11	CARBON 27K 5% 1/4W	
R201	1-249-434-11	CARBON 27K 5% 1/4W	
		< VARIABLE RESISTOR >	
RV101	1-241-937-11	RES, VAR, CARBON 20K/20K (REC LEVEL)	
**			
*	1-647-405-11	HEADPHONE JACK BOARD	
		********************	
		< CAPACITOR >	
C180	1-162-290-31	CERAMIC 470PF 10% 50V	
C280	1-162-290-31	CERAMIC 470PF 10% 50V	
C451	1-126-024-11	ELECT 220uF 20% 25V	
C452	1-126-024-11	ELECT 220uF 20% 25V	
		< IC >	
IC401	8-759-634-50	IC M5218AL	
		< JACK >	
J161	1-565-327-11	JACK, LARGE TYPE 1P (HEADPHONES)	
		< RESISTOR >	
R128	1-249-437-11	CARBON 47K 5% 1/4W	
R129	1-249-425-11	CARBON 4.7K 5% 1/4W	
R130	1-249-437-11	CARBON 47K 5% 1/4W	
R131	1-249-409-11	CARBON 220 5% 1/4W	
R228	1-249-437-11	CARBON 47K 5% 1/4W	
R229	1-249-425-11	CARBON 4.7K 5% 1/4W	
R230	1-249-437-11	CARBON 47K 5% 1/4W	
R231	1-249-409-11	CARBON 220 5% 1/4W	
**			
*	1-647-406-11	HEADPHONE VOL BOARD	
		*******************	
		< VARIABLE RESISTOR >	
RV102	1-241-537-11	RES, VAR, CARBON 20K/20K (HEADPHONES LEVEL)	
**			

When indicating parts by reference number, please include the board name.

MAIN DRUM DRIVE

Ref. No.	Part No.	Description			Remarks
*	A-2056-488-A	DRUM DRIVE BOARD, COMPLETE			
		**************************			
*	3-343-491-01	HOLDER (S SENSOR B)			
*	4-870-539-00	PLATE, GROUND			
		< CAPACITOR >			
C01	1-126-176-11	ELECT	220uF	20%	10V
C02	1-126-157-11	ELECT	10uF	20%	16V
C03	1-124-257-00	ELECT	2.2uF	20%	50V
C04	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C05	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C08	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C21	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C31	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C32	1-164-232-11	CERAMIC CHIP	0.01uF		50V
		< CONNECTOR >			
* CN01	1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			
* CN02	1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			
* CN03	1-564-338-00	PIN, CONNECTOR 4P			
* CN04	1-564-336-00	PIN, CONNECTOR 2P			
* CN06	1-564-339-00	PIN, CONNECTOR 5P			
CN07	1-564-721-11	PIN, CONNECTOR (SMALL TYPE) 5P			
* CN08	1-568-872-11	SOCKET, CONNECTOR 30P			
* CN09	1-564-706-11	PIN, CONNECTOR (SMALL TYPE) 4P			
* CN10	1-564-719-11	PIN, CONNECTOR (SMALL TYPE) 3P			
		< IC >			
IC01	8-759-107-68	IC	CX20115A		
IC02	8-759-502-80	IC	LM358M		
IC03	8-759-502-80	IC	LM358M		
		< JUMPER RESISTOR >			
JW06	1-216-296-00	METAL CHIP	0	5%	1/8W
JW07	1-216-296-00	METAL CHIP	0	5%	1/8W
JW08	1-216-296-00	METAL CHIP	0	5%	1/8W
JW09	1-216-296-00	METAL CHIP	0	5%	1/8W
JW10	1-216-296-00	METAL CHIP	0	5%	1/8W
JW11	1-216-296-00	METAL CHIP	0	5%	1/8W
JW12	1-216-296-00	METAL CHIP	0	5%	1/8W
JW13	1-216-296-00	METAL CHIP	0	5%	1/8W
JW14	1-216-296-00	METAL CHIP	0	5%	1/8W
JW15	1-216-296-00	METAL CHIP	0	5%	1/8W
JW16	1-216-296-00	METAL CHIP	0	5%	1/8W
JW17	1-216-296-00	METAL CHIP	0	5%	1/8W
JW18	1-216-296-00	METAL CHIP	0	5%	1/8W
JW19	1-216-296-00	METAL CHIP	0	5%	1/8W
JW20	1-216-296-00	METAL CHIP	0	5%	1/8W
JW21	1-216-296-00	METAL CHIP	0	5%	1/8W

Ref. No.	Part No.	Description			Remarks
JW22	1-216-296-00	METAL CHIP	0	5%	1/8W
JW23	1-216-296-00	METAL CHIP	0	5%	1/8W
JW24	1-216-296-00	METAL CHIP	0	5%	1/8W
JW25	1-216-296-00	METAL CHIP	0	5%	1/8W
JW26	1-216-296-00	METAL CHIP	0	5%	1/8W
JW27	1-216-296-00	METAL CHIP	0	5%	1/8W
JW28	1-216-296-00	METAL CHIP	0	5%	1/8W
JW29	1-216-296-00	METAL CHIP	0	5%	1/8W
JW30	1-216-296-00	METAL CHIP	0	5%	1/8W
		< PHOTO INTERUPTER >			
PH01	8-719-939-23	DIODE	GP-2S09-C		
PH02	8-719-939-23	DIODE	GP-2S09-C		
		< TRANSISTOR >			
Q01	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
Q02	8-729-101-07	TRANSISTOR	2SB798-DL		
		< RESISTOR >			
R01	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R02	1-216-075-00	METAL CHIP	12K	5%	1/10W
R03	1-216-029-00	METAL CHIP	150	5%	1/10W
R04	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R05	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R06	1-216-085-00	METAL CHIP	33K	5%	1/10W
R07	1-216-025-00	METAL CHIP	100	5%	1/10W
R08	1-216-049-00	METAL CHIP	1K	5%	1/10W
R09	1-216-073-00	METAL CHIP	10K	5%	1/10W
R10	1-216-073-00	METAL CHIP	10K	5%	1/10W
R11	1-216-073-00	METAL CHIP	10K	5%	1/10W
R12	1-216-089-00	METAL CHIP	47K	5%	1/10W
R13	1-216-073-00	METAL CHIP	10K	5%	1/10W
R14	1-216-037-00	METAL CHIP	330	5%	1/10W
R21	1-216-073-00	METAL CHIP	10K	5%	1/10W
R22	1-216-081-00	METAL CHIP	22K	5%	1/10W
R23	1-216-077-00	METAL CHIP	15K	5%	1/10W
R24	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R25	1-216-103-00	METAL CHIP	180K	5%	1/10W
R26	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R31	1-216-073-00	METAL CHIP	10K	5%	1/10W
R32	1-216-081-00	METAL CHIP	22K	5%	1/10W
R35	1-216-103-00	METAL CHIP	180K	5%	1/10W
R36	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
**					
*	A-2006-882-A	MAIN BOARD, COMPLETE			
		********************			
		< CAPACITOR >			
C101	1-126-049-11	ELECT	22uF	20%	25V

When indicating parts by reference number, please include the board name.

MAIN

Ref. No.	Part No.	Description			Remarks
C102	1-126-023-11	ELECT	100uF	20%	16V
C103	1-136-153-00	FILM	0.01uF	5%	50V
C105	1-124-903-11	ELECT	1uF	20%	50V
C110	1-136-755-11	FILM	390PF	5%	630V
C114	1-136-438-11	FILM	270PF	5%	630V
C115	1-136-438-11	FILM	270PF	5%	630V
C117	1-130-475-00	MYLAR	0.0022uF	5%	50V
C118	1-130-475-00	MYLAR	0.0022uF	5%	50V
C120	1-126-023-11	ELECT	100uF	20%	16V
C121	1-136-755-11	FILM	390PF	5%	630V
C201	1-126-049-11	ELECT	22uF	20%	25V
C202	1-126-023-11	ELECT	100uF	20%	16V
C203	1-136-153-00	FILM	0.01uF	5%	50V
C205	1-124-903-11	ELECT	1uF	20%	50V
C210	1-136-755-11	FILM	390PF	5%	630V
C214	1-136-438-11	FILM	270PF	5%	630V
C215	1-136-438-11	FILM	270PF	5%	630V
C217	1-130-475-00	MYLAR	0.0022uF	5%	50V
C218	1-130-475-00	MYLAR	0.0022uF	5%	50V
C220	1-126-023-11	ELECT	100uF	20%	16V
C221	1-136-755-11	FILM	390PF	5%	630V
C300	1-162-294-31	CERAMIC	0.001uF	10%	50V
C301	1-164-159-11	CERAMIC	0.1uF		50V
C302	1-164-159-11	CERAMIC	0.1uF		50V
C303	1-162-211-31	CERAMIC	33PF	5%	50V
C304	1-124-907-11	ELECT	10uF	20%	50V
C305	1-162-306-11	CERAMIC	0.01uF	20%	16V
C306	1-164-159-11	CERAMIC	0.1uF		50V
C309	1-124-442-00	ELECT	330uF	20%	6.3V
C314	1-162-199-31	CERAMIC	10PF	5%	50V
C315	1-162-294-31	CERAMIC	0.001uF	10%	50V
C316	1-162-199-31	CERAMIC	10PF	5%	50V
C317	1-162-201-31	CERAMIC	12PF	5%	50V
C318	1-162-201-31	CERAMIC	12PF	5%	50V
C319	1-164-159-11	CERAMIC	0.1uF		50V
C326	1-162-201-31	CERAMIC	12PF	5%	50V
C327	1-162-201-31	CERAMIC	12PF	5%	50V
C328	1-124-903-11	ELECT	1uF	20%	50V
C329	1-162-294-31	CERAMIC	0.001uF	10%	50V
C330	1-162-294-31	CERAMIC	0.001uF	10%	50V
C331	1-162-294-31	CERAMIC	0.001uF	10%	50V
C332	1-162-293-31	CERAMIC	820PF	10%	50V
C333	1-162-283-31	CERAMIC	120PF	10%	50V
C334	1-161-375-00	CERAMIC	0.0022uF	20%	50V
C335	1-161-375-00	CERAMIC	0.0022uF	20%	50V
C336	1-162-289-31	CERAMIC	390PF	10%	50V
C337	1-161-329-00	CERAMIC	0.0068uF	20%	16V
C338	1-162-306-11	CERAMIC	0.01uF	20%	16V
C339	1-162-306-11	CERAMIC	0.01uF	20%	16V
C340	1-162-290-31	CERAMIC	470PF	10%	50V

Ref. No.	Part No.	Description			Remarks
C341	1-162-306-11	CERAMIC	0.01uF	20%	16V
C342	1-124-907-11	ELECT	10uF	20%	50V
C343	1-162-306-11	CERAMIC	0.01uF	20%	16V
C344	1-162-306-11	CERAMIC	0.01uF	20%	16V
C346	1-162-306-11	CERAMIC	0.01uF	20%	16V
C347	1-162-294-31	CERAMIC	0.001uF	10%	50V
C348	1-124-907-11	ELECT	10uF	20%	50V
C362	1-124-902-00	ELECT	0.47uF	20%	50V
C363	1-124-907-11	ELECT	10uF	20%	50V
C401	1-136-165-00	FILM	0.1uF	5%	50V
C402	1-136-165-00	FILM	0.1uF	5%	50V
C405	1-136-165-00	FILM	0.1uF	5%	50V
C406	1-126-058-11	ELECT	4.7uF	20%	63V
C407	1-136-153-00	FILM	0.01uF	5%	50V
C408	1-164-159-11	CERAMIC	0.1uF		50V
C409	1-126-023-11	ELECT	100uF	20%	16V
C410	1-126-026-11	ELECT	470uF	20%	25V
C411	1-126-026-11	ELECT	470uF	20%	25V
C412	1-136-165-00	FILM	0.1uF	5%	50V
C416	1-136-165-00	FILM	0.1uF	5%	50V
C417	1-164-159-11	CERAMIC	0.1uF		50V
C418	1-136-165-00	FILM	0.1uF	5%	50V
C419	1-136-165-00	FILM	0.1uF	5%	50V
C420	1-136-165-00	FILM	0.1uF	5%	50V
C421	1-136-165-00	FILM	0.1uF	5%	50V
C422	1-126-023-11	ELECT	100uF	20%	16V
C423	1-126-023-11	ELECT	100uF	20%	16V
C424	1-136-165-00	FILM	0.1uF	5%	50V
C425	1-126-026-11	ELECT	470uF	20%	25V
C426	1-136-165-00	FILM	0.1uF	5%	50V
C427	1-136-165-00	FILM	0.1uF	5%	50V
C428	1-136-165-00	FILM	0.1uF	5%	50V
C429	1-136-165-00	FILM	0.1uF	5%	50V
C430	1-124-907-11	ELECT	10uF	20%	50V
C431	1-124-907-11	ELECT	10uF	20%	50V
C435	1-126-023-11	ELECT	100uF	20%	16V
C436	1-126-023-11	ELECT	100uF	20%	16V
C437	1-126-023-11	ELECT	100uF	20%	16V
C438	1-124-442-00	ELECT	330uF	20%	6.3V
C439	1-164-159-11	CERAMIC	0.1uF		50V
C440	1-124-442-00	ELECT	330uF	20%	6.3V
C441	1-164-159-11	CERAMIC	0.1uF		50V
C442	1-164-159-11	CERAMIC	0.1uF		50V
C446	1-164-159-11	CERAMIC	0.1uF		50V
C447	1-164-159-11	CERAMIC	0.1uF		50V
C448	1-164-159-11	CERAMIC	0.1uF		50V
C449	1-164-159-11	CERAMIC	0.1uF		50V
C450	1-136-165-00	FILM	0.1uF	5%	50V
C451	1-136-165-00	FILM	0.1uF	5%	50V
C453	1-136-165-00	FILM	0.1uF	5%	50V

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description			Remarks
C461	1-164-159-11	CERAMIC	0.1uF		50V
C465	1-130-475-00	MYLAR	0.0022uF	5%	50V
C466	1-130-475-00	MYLAR	0.0022uF	5%	50V
C470	1-164-159-11	CERAMIC	0.1uF		50V
C471	1-164-159-11	CERAMIC	0.1uF		50V
C472	1-164-159-11	CERAMIC	0.1uF		50V
C473	1-164-159-11	CERAMIC	0.1uF		50V
C475	1-164-159-11	CERAMIC	0.1uF		50V
C499	1-124-927-11	ELECT	4.7uF	20%	100V
C501	1-136-153-00	FILM	0.01uF	5%	50V
C502	1-162-219-31	CERAMIC	68PF	5%	50V
C503	1-162-199-31	CERAMIC	10PF	5%	50V
C504	1-124-907-11	ELECT	10uF	20%	50V
C505	1-162-211-31	CERAMIC	33PF	5%	50V
C506	1-162-199-31	CERAMIC	10PF	5%	50V
C507	1-136-153-00	FILM	0.01uF	5%	50V
C508	1-136-158-00	FILM	0.027uF	5%	50V
C515	1-136-169-00	FILM	0.22uF	5%	50V
C907	1-124-564-11	ELECT	4700uF	20%	25V
C908	1-164-159-11	CERAMIC	0.1uF		50V
C909	1-126-926-11	ELECT	1000uF	20%	10V
C912	1-126-926-11	ELECT	1000uF	20%	10V
C913	1-124-484-11	ELECT	220uF	20%	35V
C914	1-124-484-11	ELECT	220uF	20%	35V
C916	1-124-122-11	ELECT	100uF	20%	50V
C917	1-164-159-11	CERAMIC	0.1uF		50V
C920	1-124-564-11	ELECT	4700uF	20%	25V
C921	1-124-564-11	ELECT	4700uF	20%	25V
C924	1-126-059-11	ELECT	10uF	20%	50V
C926	1-126-027-11	ELECT	1000uF	20%	25V
C927	1-126-027-11	ELECT	1000uF	20%	25V
		< CONNECTOR >			
* CN107	1-564-509-11	PLUG, CONNECTOR 6P			
* CN301	1-564-706-11	PIN, CONNECTOR (SMALL TYPE) 4P			
* CN304	1-564-708-11	PIN, CONNECTOR (SMALL TYPE) 6P			
* CN308	1-564-339-00	PIN, CONNECTOR 5P			
* CN333	1-564-514-11	PLUG, CONNECTOR 11P			
* CN501	1-564-716-11	PIN, CONNECTOR (SMALL TYPE)14P			
* CN508	1-568-933-11	SOCKET, CONNECTOR 30P			
* CN571	1-568-836-11	SOCKET, CONNECTOR 17P			
* CN932	1-564-513-11	PLUG, CONNECTOR 10P			
		< DIODE >			
D101	8-719-987-63	DIODE	1N4148M		
D102	8-719-987-63	DIODE	1N4148M		
D201	8-719-987-63	DIODE	1N4148M		
D202	8-719-987-63	DIODE	1N4148M		
D301	8-719-987-63	DIODE	1N4148M		
D302	8-719-987-63	DIODE	1N4148M		
D305	8-719-987-63	DIODE	1N4148M		

Ref.No.	Part No.	Description		Remarks
D306	8-719-200-82	DIODE	11ES2	
D308	8-719-987-63	DIODE	1N4148M	
D314	8-719-200-82	DIODE	11ES2	
D315	8-719-200-82	DIODE	11ES2	
D501	8-719-936-68	DIODE	KV1260	
D901	8-719-000-78	DIODE	UZL-7L2	
D905	8-719-312-47	DIODE	RBA-406B	
D907	8-719-200-82	DIODE	11ES2	
D908	8-719-200-82	DIODE	11ES2	
D909	8-719-987-63	DIODE	1N4148M	
D910	8-719-933-33	DIODE	HZS6A1L	
D911	8-719-200-77	DIODE	10E2N	
D912	8-719-200-77	DIODE	10E2N	
D913	8-719-200-77	DIODE	10E2N	
D914	8-719-200-77	DIODE	10E2N	
D920	8-719-933-33	DIODE	HZS6A1L	
D921	8-719-987-63	DIODE	1N4148M	
D922	8-719-987-63	DIODE	1N4148M	
		< FUSE >		
⚠F901	1-532-286-00	FUSE, TIME-LAG (AEP, UK)		
⚠F901	1-532-744-11	FUSE, GLASS TUBE (US, Canadian)		
		< IC >		
IC301	8-759-917-18	IC	SN74HCU04N	
IC302	8-759-916-12	IC	TC74HC00P	
IC304	8-759-135-80	IC	uPC358C	
IC307	8-752-339-43	IC	CXD2601AQ	
IC310	8-752-337-80	IC	CXK58257AM-12L	
IC311	8-752-840-65	IC	CXP80524-073Q	
IC312	8-752-840-81	IC	CXP80524-075Q	
IC316	8-759-135-80	IC	uPC358C	
IC317	8-759-135-80	IC	uPC358C	
IC318	8-759-135-80	IC	uPC358C	
IC319	8-759-633-65	IC	M54641L	
IC320	8-759-633-65	IC	M54641L	
IC321	8-759-520-90	IC	PST572E	
IC331	8-749-921-11	IC	GP1F32R (OPTICAL IN)	
IC332	8-749-921-12	IC	GP1F32T (OPTICAL OUT)	
IC356	8-759-145-58	IC	uPC4558C	
IC357	8-759-231-53	IC	M5F7805	
IC358	8-759-245-79	IC	M5F7905	
IC359	8-759-504-36	IC	AK5339	
IC360	8-759-145-58	IC	uPC4558C	
IC361	8-759-602-83	IC	M5238P	
IC362	8-752-351-20	IC	CXD2561BM-1	
IC364	8-752-356-03	IC	CXD2567M	
IC374	8-759-231-53	IC	M5F7805	
IC375	8-759-900-72	IC	NE5532P	
IC376	8-759-900-72	IC	NE5532P	
IC431	8-759-916-12	IC	TC74HC00P	
IC432	8-759-916-29	IC	SN74HC74AN	
IC433	8-759-916-29	IC	SN74HC74AN	

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description		Remarks
IC901	8-759-145-58	IC	uPC4558C	
		< JACK >		
J301	1-569-443-21	JACK, PIN 4P (LINE IN/OUT)		
J302	1-568-750-21	JACK, PIN (1P SHIELD TYPE)		(COAXIAL IN)
		< COIL >		
L301	1-410-509-11	INDUCTOR	10uH	
L302	1-410-498-11	INDUCTOR	1.2uH	
L303	1-410-509-11	INDUCTOR	10uH	
L304	1-410-509-11	INDUCTOR	10uH	
L305	1-410-515-11	INDUCTOR	33uH	
L306	1-410-509-11	INDUCTOR	10uH	
L307	1-410-509-11	INDUCTOR	10uH	
L310	1-410-397-21	FERRITE BEAD INDUCTOR		
L350	1-410-509-11	INDUCTOR	10uH	
L351	1-410-324-11	INDUCTOR	4.7uH	
L352	1-410-324-11	INDUCTOR	4.7uH	
L501	1-424-604-11	COIL		
L502	1-410-509-11	INDUCTOR	10uH	
		< TRANSISTOR >		
Q302	8-729-801-93	TRANSISTOR	2SD1387	
Q311	8-729-900-80	TRANSISTOR	DTC114ES	
Q312	8-729-107-85	TRANSISTOR	2SC3623A-K	
Q313	8-729-900-61	TRANSISTOR	DTA114ES	
Q318	8-729-900-80	TRANSISTOR	DTC114ES	
Q319	8-729-900-80	TRANSISTOR	DTC114ES	
Q320	8-729-927-11	TRANSISTOR	2SA1585SQR	
Q321	8-729-927-12	TRANSISTOR	2SC4115SQR	
Q333	8-729-924-90	TRANSISTOR	2SB1370-EF	
Q334	8-729-119-76	TRANSISTOR	2SA1175-HFE	
Q335	8-729-620-05	TRANSISTOR	2SC2603-EF	
Q336	8-729-927-11	TRANSISTOR	2SA1585SQR	
Q337	8-729-927-11	TRANSISTOR	2SA1585SQR	
Q338	8-729-927-12	TRANSISTOR	2SC4115SQR	
Q339	8-729-927-12	TRANSISTOR	2SC4115SQR	
Q340	8-729-620-05	TRANSISTOR	2SC2603-EF	
Q341	8-729-620-05	TRANSISTOR	2SC2603-EF	
Q342	8-729-209-15	TRANSISTOR	2SD2012	
Q432	8-729-900-80	TRANSISTOR	DTC114ES	
Q433	8-729-107-85	TRANSISTOR	2SC3623A-K	
Q434	8-729-107-85	TRANSISTOR	2SC3623A-K	
Q435	8-729-900-61	TRANSISTOR	DTA114ES	
Q436	8-729-900-80	TRANSISTOR	DTC114ES	
Q437	8-729-900-61	TRANSISTOR	DTA114ES	
Q438	8-729-900-80	TRANSISTOR	DTC114ES	
Q439	8-729-900-80	TRANSISTOR	DTC114ES	
Q440	8-729-620-05	TRANSISTOR	2SC2603-EF	

Ref.No.	Part No.	Description			Remarks
Q442	8-729-119-76	TRANSISTOR	2SA1175-HFE		
Q501	8-729-200-56	TRANSISTOR	2SK241-GR		
Q502	8-729-200-56	TRANSISTOR	2SK241-GR		
Q503	8-729-620-05	TRANSISTOR	2SC2603-EF		
Q504	8-729-620-05	TRANSISTOR	2SC2603-EF		
Q505	8-729-620-05	TRANSISTOR	2SC2603-EF		
Q901	8-729-140-97	TRANSISTOR	KSA708		
Q902	8-729-620-05	TRANSISTOR	2SC2603-EF		
Q903	8-729-209-15	TRANSISTOR	2SD2012		
Q904	8-729-620-05	TRANSISTOR	2SC2603-EF		
Q905	8-729-209-15	TRANSISTOR	2SD2012		
Q906	8-729-119-76	TRANSISTOR	2SA1175-HFE		
Q920	8-729-224-62	TRANSISTOR	2SK246-GR		
Q921	8-729-224-62	TRANSISTOR	2SK246-GR		
Q922	8-729-620-05	TRANSISTOR	2SC2603-EF		
Q923	8-729-119-76	TRANSISTOR	2SA1175-HFE		
Q924	8-729-620-05	TRANSISTOR	2SC2603-EF		
Q925	8-729-119-76	TRANSISTOR	2SA1175-HFE		
Q926	8-729-209-15	TRANSISTOR	2SD2012		
Q927	8-729-924-90	TRANSISTOR	2SB1370-EF		
Q928	8-729-900-80	TRANSISTOR	DTC114ES		
Q929	8-729-900-80	TRANSISTOR	DTC114ES		
		< RESISTOR >			
R103	1-249-423-11	CARBON	3.3K	5%	1/4W
R104	1-249-436-11	CARBON	39K	5%	1/4W
R105	1-247-893-11	CARBON	390K	5%	1/4W
R106	1-249-399-11	CARBON	33	5%	1/4W
R107	1-247-854-11	CARBON	9.1K	5%	1/4W
R108	1-247-854-11	CARBON	9.1K	5%	1/4W
R109	1-247-854-11	CARBON	9.1K	5%	1/4W
R110	1-247-854-11	CARBON	9.1K	5%	1/4W
R117	1-249-425-11	CARBON	4.7K	5%	1/4W
R118	1-249-425-11	CARBON	4.7K	5%	1/4W
R119	1-247-852-11	CARBON	7.5K	5%	1/4W
R120	1-247-852-11	CARBON	7.5K	5%	1/4W
R122	1-247-834-11	CARBON	1.3K	5%	1/4W
R123	1-247-834-11	CARBON	1.3K	5%	1/4W
R124	1-249-441-11	CARBON	100K	5%	1/4W
R125	1-249-408-11	CARBON	180	5%	1/4W
R126	1-249-429-11	CARBON	10K	5%	1/4W
R127	1-249-405-11	CARBON	100	5%	1/4W
R128	1-249-429-11	CARBON	10K	5%	1/4W
R129	1-249-429-11	CARBON	10K	5%	1/4W
R134	1-249-408-11	CARBON	180	5%	1/4W
R150	1-247-893-11	CARBON	390K	5%	1/4W
R151	1-259-882-11	CARBON	3.3M	5%	1/4W
R152	1-247-903-00	CARBON	1M	5%	1/4W
R180	1-249-397-11	CARBON	22	5%	1/4W
R203	1-249-423-11	CARBON	3.3K	5%	1/4W

When indicating parts by reference number, please include the board name.

Ref. No.	Part No.	Description			Remarks
R204	1-249-436-11	CARBON	39K	5%	1/4W
R205	1-247-893-11	CARBON	390K	5%	1/4W
R206	1-249-399-11	CARBON	33	5%	1/4W
R207	1-247-854-11	CARBON	9.1K	5%	1/4W
R208	1-247-854-11	CARBON	9.1K	5%	1/4W
R209	1-247-854-11	CARBON	9.1K	5%	1/4W
R210	1-247-854-11	CARBON	9.1K	5%	1/4W
R217	1-249-425-11	CARBON	4.7K	5%	1/4W
R218	1-249-425-11	CARBON	4.7K	5%	1/4W
R219	1-247-852-11	CARBON	7.5K	5%	1/4W
R220	1-247-852-11	CARBON	7.5K	5%	1/4W
R222	1-247-834-11	CARBON	1.3K	5%	1/4W
R223	1-247-834-11	CARBON	1.3K	5%	1/4W
R224	1-249-441-11	CARBON	100K	5%	1/4W
R225	1-249-408-11	CARBON	180	5%	1/4W
R226	1-249-429-11	CARBON	10K	5%	1/4W
R227	1-249-405-11	CARBON	100	5%	1/4W
R228	1-249-429-11	CARBON	10K	5%	1/4W
R229	1-249-429-11	CARBON	10K	5%	1/4W
R234	1-249-408-11	CARBON	180	5%	1/4W
R250	1-247-893-11	CARBON	390K	5%	1/4W
R251	1-259-882-11	CARBON	3.3M	5%	1/4W
R252	1-247-903-00	CARBON	1M	5%	1/4W
R280	1-249-397-11	CARBON	22	5%	1/4W
R301	1-249-425-11	CARBON	4.7K	5%	1/4W
R302	1-247-891-00	CARBON	330K	5%	1/4W
R303	1-247-804-11	CARBON	75	5%	1/4W
R304	1-249-415-11	CARBON	680	5%	1/4W
R305	1-249-429-11	CARBON	10K	5%	1/4W
R306	1-249-417-11	CARBON	1K	5%	1/4W
R307	1-249-437-11	CARBON	47K	5%	1/4W
R308	1-249-429-11	CARBON	10K	5%	1/4W
R310	1-249-417-11	CARBON	1K	5%	1/4W
R311	1-249-431-11	CARBON	15K	5%	1/4W
R312	1-249-421-11	CARBON	2.2K	5%	1/4W
R313	1-249-421-11	CARBON	2.2K	5%	1/4W
R314	1-249-435-11	CARBON	33K	5%	1/4W
R315	1-249-429-11	CARBON	10K	5%	1/4W
R316	1-247-804-11	CARBON	75	5%	1/4W
R317	1-249-409-11	CARBON	220	5%	1/4W
R318	1-249-409-11	CARBON	220	5%	1/4W
R319	1-249-409-11	CARBON	220	5%	1/4W
R320	1-249-413-11	CARBON	470	5%	1/4W
R322	1-249-429-11	CARBON	10K	5%	1/4W
R326	1-249-409-11	CARBON	220	5%	1/4W
R327	1-249-425-11	CARBON	4.7K	5%	1/4W
R328	1-249-417-11	CARBON	1K	5%	1/4W
R331	1-249-429-11	CARBON	10K	5%	1/4W
R332	1-249-429-11	CARBON	10K	5%	1/4W
R333	1-249-441-11	CARBON	100K	5%	1/4W

Ref. No.	Part No.	Description			Remarks
R334	1-249-425-11	CARBON	4.7K	5%	1/4W
R335	1-249-425-11	CARBON	4.7K	5%	1/4W
R336	1-249-425-11	CARBON	4.7K	5%	1/4W
R337	1-249-429-11	CARBON	10K	5%	1/4W
R338	1-249-433-11	CARBON	22K	5%	1/4W
R339	1-249-401-11	CARBON	47	5%	1/4W
R340	1-247-881-00	CARBON	120K	5%	1/4W
R341	1-247-881-00	CARBON	120K	5%	1/4W
R342	1-247-881-00	CARBON	120K	5%	1/4W
R343	1-247-889-00	CARBON	270K	5%	1/4W
R344	1-247-887-00	CARBON	220K	5%	1/4W
R345	1-247-887-00	CARBON	220K	5%	1/4W
R346	1-249-441-11	CARBON	100K	5%	1/4W
R347	1-249-441-11	CARBON	100K	5%	1/4W
R348	1-249-441-11	CARBON	100K	5%	1/4W
R349	1-249-441-11	CARBON	100K	5%	1/4W
R350	1-249-435-11	CARBON	33K	5%	1/4W
R351	1-249-435-11	CARBON	33K	5%	1/4W
R352	1-249-441-11	CARBON	100K	5%	1/4W
R353	1-249-441-11	CARBON	100K	5%	1/4W
R354	1-249-441-11	CARBON	100K	5%	1/4W
R355	1-249-417-11	CARBON	1K	5%	1/4W
R356	1-249-417-11	CARBON	1K	5%	1/4W
R357	1-249-405-11	CARBON	100	5%	1/4W
R358	1-249-417-11	CARBON	1K	5%	1/4W
R359	1-249-408-11	CARBON	180	5%	1/4W
R360	1-249-430-11	CARBON	12K	5%	1/4W
R361	1-249-430-11	CARBON	12K	5%	1/4W
R365	1-249-425-11	CARBON	4.7K	5%	1/4W
R366	1-249-441-11	CARBON	100K	5%	1/4W
R367	1-249-417-11	CARBON	1K	5%	1/4W
R368	1-249-417-11	CARBON	1K	5%	1/4W
R369	1-249-405-11	CARBON	100	5%	1/4W
R370	1-249-405-11	CARBON	100	5%	1/4W
R371	1-249-417-11	CARBON	1K	5%	1/4W
R372	1-249-405-11	CARBON	100	5%	1/4W
R373	1-249-417-11	CARBON	1K	5%	1/4W
R374	1-249-417-11	CARBON	1K	5%	1/4W
R375	1-249-405-11	CARBON	100	5%	1/4W
R376	1-249-417-11	CARBON	1K	5%	1/4W
R377	1-249-441-11	CARBON	100K	5%	1/4W
R378	1-249-429-11	CARBON	10K	5%	1/4W
R379	1-249-414-11	CARBON	560	5%	1/4W
R380	1-249-411-11	CARBON	330	5%	1/4W
⚠R381	1-215-882-00	METAL OXIDE	22	5%	2W
R382	1-249-441-11	CARBON	100K	5%	1/4W
R383	1-249-401-11	CARBON	47	5%	1/4W
R384	1-249-437-11	CARBON	47K	5%	1/4W
R385	1-249-437-11	CARBON	47K	5%	1/4W
R386	1-249-407-11	CARBON	150	5%	1/4W

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

Ref. No.	Part No.	Description			Remarks
R388	1-249-423-11	CARBON	3.3K	5%	1/4W
R389	1-249-423-11	CARBON	3.3K	5%	1/4W
R390	1-249-423-11	CARBON	3.3K	5%	1/4W
R391	1-249-423-11	CARBON	3.3K	5%	1/4W
R392	1-249-417-11	CARBON	1K	5%	1/4W
R393	1-249-420-11	CARBON	1.8K	5%	1/4W
R395	1-249-425-11	CARBON	4.7K	5%	1/4W
R396	1-249-441-11	CARBON	100K	5%	1/4W
R400	1-249-437-11	CARBON	47K	5%	1/4W
R401	1-249-437-11	CARBON	47K	5%	1/4W
R406	1-249-429-11	CARBON	10K	5%	1/4W
R407	1-249-429-11	CARBON	10K	5%	1/4W
R408	1-249-429-11	CARBON	10K	5%	1/4W
R409	1-249-425-11	CARBON	4.7K	5%	1/4W
R410	1-249-425-11	CARBON	4.7K	5%	1/4W
R411	1-249-429-11	CARBON	10K	5%	1/4W
R412	1-249-441-11	CARBON	100K	5%	1/4W
R414	1-249-413-11	CARBON	470	5%	1/4W
R415	1-249-437-11	CARBON	47K	5%	1/4W
R416	1-249-437-11	CARBON	47K	5%	1/4W
R417	1-249-429-11	CARBON	10K	5%	1/4W
R420	1-249-429-11	CARBON	10K	5%	1/4W
R421	1-249-429-11	CARBON	10K	5%	1/4W
R422	1-249-429-11	CARBON	10K	5%	1/4W
R423	1-249-429-11	CARBON	10K	5%	1/4W
R424	1-249-411-11	CARBON	330	5%	1/4W
R425	1-249-411-11	CARBON	330	5%	1/4W
R429	1-249-407-11	CARBON	150	5%	1/4W
R432	1-249-393-11	CARBON	10	5%	1/4W
R433	1-216-349-00	CARBON	1	5%	1/2W
R435	1-249-409-11	CARBON	220	5%	1/4W
R436	1-249-409-11	CARBON	220	5%	1/4W
R437	1-249-409-11	CARBON	220	5%	1/4W
R438	1-249-409-11	CARBON	220	5%	1/4W
R440	1-249-441-11	CARBON	100K	5%	1/4W
R441	1-249-441-11	CARBON	100K	5%	1/4W
R442	1-249-441-11	CARBON	100K	5%	1/4W
R443	1-249-437-11	CARBON	47K	5%	1/4W
R444	1-249-417-11	CARBON	1K	5%	1/4W
R445	1-249-419-11	CARBON	1.5K	5%	1/4W
R446	1-247-883-00	CARBON	150K	5%	1/4W
R447	1-249-425-11	CARBON	4.7K	5%	1/4W
R448	1-249-413-11	CARBON	470	5%	1/4W
R449	1-249-424-11	CARBON	3.9K	5%	1/4W
R456	1-249-429-11	CARBON	10K	5%	1/4W
R457	1-249-413-11	CARBON	470	5%	1/4W
R495	1-249-429-11	CARBON	10K	5%	1/4W
R497	1-249-429-11	CARBON	10K	5%	1/4W
R501	1-249-417-11	CARBON	1K	5%	1/4W
R502	1-249-429-11	CARBON	10K	5%	1/4W

Ref. No.	Part No.	Description				Remarks
R503	1-249-429-11	CARBON	10K	5%	1/4W	
R504	1-249-429-11	CARBON	10K	5%	1/4W	
R505	1-249-429-11	CARBON	10K	5%	1/4W	
R506	1-249-441-11	CARBON	100K	5%	1/4W	
R507	1-249-417-11	CARBON	1K	5%	1/4W	
R508	1-249-417-11	CARBON	1K	5%	1/4W	
R509	1-249-417-11	CARBON	1K	5%	1/4W	
R516	1-249-425-11	CARBON	4.7K	5%	1/4W	
R517	1-249-417-11	CARBON	1K	5%	1/4W	
R518	1-249-401-11	CARBON	47	5%	1/4W	
R519	1-249-421-11	CARBON	2.2K	5%	1/4W	
R520	1-247-903-00	CARBON	1M	5%	1/4W	
R901	1-249-425-11	CARBON	4.7K	5%	1/4W	
⚠R902	1-212-849-00	FUSIBLE	4.7	5%	1/4W	F
R903	1-249-421-11	CARBON	2.2K	5%	1/4W	
R904	1-249-433-11	CARBON	22K	5%	1/4W	
R905	1-249-433-11	CARBON	22K	5%	1/4W	
R906	1-249-425-11	CARBON	4.7K	5%	1/4W	
R907	1-249-420-11	CARBON	1.8K	5%	1/4W	
R908	1-215-439-00	METAL	5.6K	1%	1/6W	
R920	1-249-429-11	CARBON	10K	5%	1/4W	
R921	1-249-409-11	CARBON	220	5%	1/4W	
R922	1-249-409-11	CARBON	220	5%	1/4W	
R923	1-249-417-11	CARBON	1K	5%	1/4W	
R924	1-249-417-11	CARBON	1K	5%	1/4W	
R925	1-249-417-11	CARBON	1K	5%	1/4W	
R926	1-249-417-11	CARBON	1K	5%	1/4W	
R927	1-249-421-11	CARBON	2.2K	5%	1/4W	
R928	1-249-421-11	CARBON	2.2K	5%	1/4W	
R929	1-249-438-11	CARBON	56K	5%	1/4W	
R930	1-249-421-11	CARBON	2.2K	5%	1/4W	
R931	1-249-421-11	CARBON	2.2K	5%	1/4W	
R932	1-249-405-11	CARBON	100	5%	1/4W	

< VARIABLE RESISTOR >

RV301	1-241-631-11	RES. ADJ. CARBON 22K (FWD TORQUE)

< RELAY >

RY301	1-515-726-11	RELAY

< VIBRATOR >

X301	1-567-816-11	VIBRATOR, CRYSTAL (18MHz)
X302	1-567-815-11	VIBRATOR, CRYSTAL (22MHz)
X303	1-578-667-11	VIBRATOR, CRYSTAL (49MHz)

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The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

Ref. No.	Part No.	Description			Remarks
*	1-647-408-11	PRIMARY BOARD			
		< CAPACITOR >			
⚠C902	1-161-742-00	CERAMIC	0.0022uF	20%	400V
⚠C903	1-161-742-00	CERAMIC	0.0022uF	20%	400V
⚠C904	1-161-742-00	CERAMIC	0.0022uF	20%	400V
⚠C905	1-161-742-00	CERAMIC	0.0022uF	20%	400V
		< CONNECTOR >			
* CN05	1-564-336-61	PIN, CONNECTOR 2P			
* CN901	1-580-230-11	PIN, CONNECTOR (PC BOARD) 3P			
		< COIL >			
⚠L901	1-421-915-11	COIL, LINE FILTER			

* * *

Ref. No.	Part No.	Description			Remarks
*	1-647-409-11	POWER RELAY BOARD			

* * *

Ref. No.	Part No.	Description			Remarks
*	1-641-486-11	MOTOR BOARD			
*	1-564-337-00	PIN, CONNECTOR 3P			
*	1-564-498-11	PIN, CONNECTOR 5P			
		< CAPACITOR >			
C01	1-162-851-11	CERAMIC	0.1MF		16V

* * *

Ref. No.	Part No.	Description			Remarks
*	1-639-304-11	REEL MOTOR BOARD			
		< CAPACITOR >			
C07	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V

* * *

Ref. No.	Part No.	Description			Remarks
		RF AMP BOARD, COMPLETE			
		< CAPACITOR >			
C1	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C2	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C3	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C4	1-162-638-11	CERAMIC CHIP	1uF		16V
C5	1-164-299-11	CERAMIC CHIP	0.22uF	10%	25V
C6	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C7	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C8	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C9	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C10	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C11	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C12	1-164-299-11	CERAMIC CHIP	0.22uF	10%	25V
C13	1-162-638-11	CERAMIC CHIP	1uF		16V
C14	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C15	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C16	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C17	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C18	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C19	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C20	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C21	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C22	1-126-603-11	ELECT CHIP	4.7uF	20%	35V
C23	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C24	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C25	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C26	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C27	1-162-638-11	CERAMIC CHIP	1uF		16V
C28	1-164-505-11	CERAMIC CHIP	2.2uF		16V
		< CONNECTOR >			
* CN51	1-566-207-11	PIN, CONNECTOR (PC BOARD) 14P			
* CN52	1-564-720-11	PIN, CONNECTOR (SMALL TYPE) 4P			
		< IC >			
IC1	8-752-039-01	IC	CXA1364R		
		< COIL >			
L1	1-408-781-00	INDUCTOR CHIP	22uH		
L2	1-408-789-21	INDUCTOR CHIP	100uH		
L3	1-408-781-00	INDUCTOR CHIP	22uH		
		< RESISTOR >			
R1	1-216-082-00	METAL GLAZE	24K	5%	1/10W
R2	1-216-082-00	METAL GLAZE	24K	5%	1/10W
R3	1-216-066-00	METAL CHIP	5.1K	5%	1/10W
R4	1-216-066-00	METAL CHIP	5.1K	5%	1/10W
R5	1-216-077-00	METAL CHIP	15K	5%	1/10W
R6	1-216-077-00	METAL CHIP	15K	5%	1/10W
R7	1-216-077-00	METAL CHIP	15K	5%	1/10W
R8	1-216-079-00	METAL CHIP	18K	5%	1/10W
R9	1-216-075-00	METAL CHIP	12K	5%	1/10W
R10	1-216-079-00	METAL CHIP	18K	5%	1/10W
R11	1-216-077-00	METAL CHIP	15K	5%	1/10W
R12	1-216-077-00	METAL CHIP	15K	5%	1/10W
R13	1-216-077-00	METAL CHIP	15K	5%	1/10W
R14	1-216-081-00	METAL CHIP	22K	5%	1/10W
R15	1-216-085-00	METAL CHIP	33K	5%	1/10W
R16	1-216-089-00	METAL CHIP	47K	5%	1/10W

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

Ref. No.	Part No.	Description			Remarks
R17	1-216-080-00	METAL CHIP	20K	5%	1/10W
R18	1-216-073-00	METAL CHIP	10K	5%	1/10W
		< VARIABLE RESISTOR >			
RV1	1-238-181-11	RES, ADJ, CERMET 4.7K			
RV2	1-238-181-11	RES, ADJ, CERMET 4.7K			

* * *

Ref. No.	Part No.	Description			Remarks
*	1-639-301-11	RGN SW BOARD			
		< SWITCH >			
S01	1-571-878-11	SWITCH, PUSH (2 KEY)			

* * *

Ref. No.	Part No.	Description			Remarks
*	1-641-487-11	SW BOARD			
	1-571-958-11	SWITCH, PUSH (1 KEY)			

* * *

Ref. No.	Part No.	Description			Remarks
*	1-639-305-11	TOP END SENSOR BOARD			
*	3-368-456-01	HOLDER (END SENSOR LIGHT)			
*	3-368-457-01	HOLDER (END SENSOR) (RECIEVE)			
		< DIODE >			
D01	8-719-988-42	DIODE	GL453S		
		< PHOTO INTERUPTER >			
PH03	8-729-907-25	TRANSISTOR	PT4850F		
PH04	8-729-907-25	TRANSISTOR	PT4850F		

* * *

Ref. No.	Part No.	Description			Remarks
		MISCELLANEOUS			
⚠6	1-575-651-21	CORD, POWER (AEP)			
⚠6	1-590-836-11	CORD, POWER (US, Canadian)			
⚠6	1-696-586-11	CORD, POWER (UK)			
66	1-751-031-11	WIRE (FLAT TYPE) (17 CORE)			
115	1-590-915-11	WIRE, FLAT TYPE (30 CORE)			
325	8-848-567-11	DRUM ASSY DOU-03A			
M901	A-2003-910-A	MOTOR ASSY, CASSETTE			
M902	8-835-361-01	MOTOR, DC U-17B			
M903	X-3363-109-1	MOTOR (CAM) ASSY			
M905	X-3363-110-2	MOTOR (REEL) ASSY			
PM902	1-454-536-11	SOLENOID, PLUNGER (BT CONTROL)			
PM903	1-454-535-11	SOLENOID, PLUNGER (BRAKE)			
⚠T901-3	1-423-558-11	TRANSFORMER, POWER (US, Canadian)			
⚠T901-3	1-423-559-11	TRANSFORMER, POWER (AEP, UK)			

* * *

Ref. No.	Part No.	Description			Remarks
		ACCESSORIES & PACKING MATERIALS			
	1-467-004-11	REMOTE COMMANDER (RM-D690A)			
	1-558-271-11	CORD, CONNECTION			
	1-696-170-11	CORD, CONNECTION			
	3-384-415-01	CUSHION			
	3-388-150-01	INDIVIDUAL CARTON			
	3-756-209-11	MANUAL, INSTRUCTION (AE2, UK)			
	3-756-209-21	MANUAL, INSTRUCTION (US, Canadian)			
	3-756-209-31	MANUAL, INSTRUCTION (Canadian)			
	3-756-209-41	MANUAL, INSTRUCTION (AE2)			
	3-756-209-51	MANUAL, INSTRUCTION (AE4)			
	4-941-762-11	COVER (MLY), BATTERY			

* * *

HARDWARE LIST

Ref. No.	Part No.	Description			Remarks
#1	7-682-548-09	SCREW +BVTT	3X8	(S)	
#2	7-685-646-79	SCREW +BVTP	3X8	TYPE2 N-S	
#3	7-685-534-19	SCREW +BTP	2.6X8	TYPE2 N-S	
#4	4-951-620-01	SCREW +BVTP	2.6X8		
#5	7-682-147-15	SCREW, TR			
#6	7-682-560-04	SCREW +BVTT	4X6	(S)	
#7	7-685-102-19	SCREW +P	2X4	TYPE2 NON-SLIT	
#8	7-685-133-19	SCREW +BTP	2.6X6	TYPE2 N-S	
#11	7-621-772-00	SCREW +B	2X3		
#13	7-621-773-86	SCREW +B	2.6X4		
#14	7-627-556-17	SCREW, PRECISION +P	2.6X3	TYPE1	
#15	7-621-772-08	SCREW +B	2X3		
#16	7-621-772-18	SCREW +B	2X4		
#17	7-627-552-47	SCREW, PRECISION +P	1.7X4		
#18	7-621-255-20	SCREW +BVTT	2X4	(S)	
#19	7-627-854-07	PRECISION SCREW +P	2X2.5	TYPE3	
#20	7-627-852-27	+P	1.7X3		
#21	7-621-255-15	SCREW +P	2X3		
#22	7-627-552-27	SCREW, PRECISION +P	1.7X2		

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

DTC-69

654.

SONY.

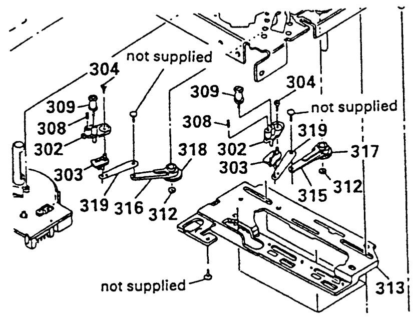
SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model

CORRECTION-1

Correct your service manual as shown below.

☛ : **indicates corrected portion.**

<table>
<tr><th>Page</th><th>INCORRECT</th><th>CORRECT</th></tr>
<tr><td>60</td><td>
304
not supplied
309
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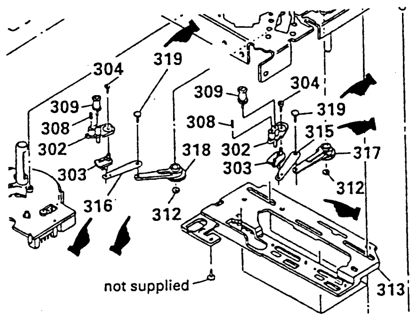
312
not supplied
313

</td><td>
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313

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</table>

9-957-610-91

Sony Corporation
Consumer A&V Products Company
Home A&V Products Div.

English
9410993-1
Printed in Japan
© 1994. 9
Published by Home A&V Products Div.
Quality Engineering Dept.

6

DTC-690

SONY.

SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model

SUPPLEMENT-1

File this supplement with the service manual.

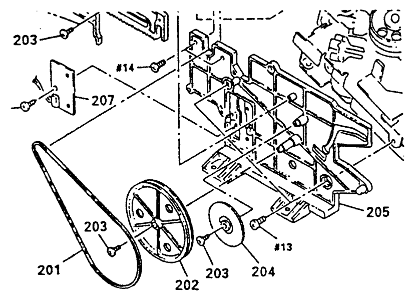
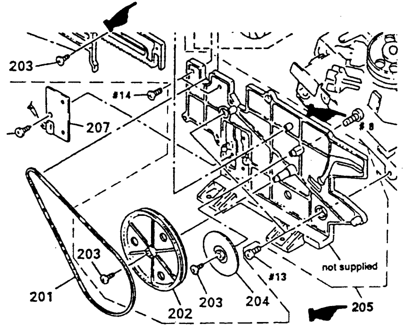
Subject : 1. Correction
2. Parts changed
3. Board change

(ECN-TC201118/TC500608/TC500800, SPM-95029)

1. CORRECTION

- Correct your service manual as shown below.

☛ : Indicates corrected portion.

Page	INCORRECT				CORRECT			
	Ref.No	Part No	Description	Remark	Ref.No	Part No	Description	Remark
59	205	3-373-234-01	CHASSIS (L)		205	A-2004-153-E	CHASSIS (L) ASSY	
								

203
#14
207
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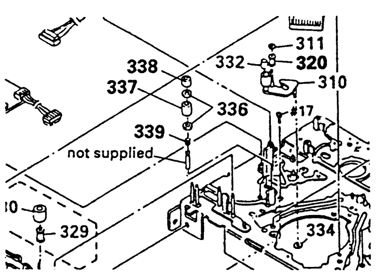
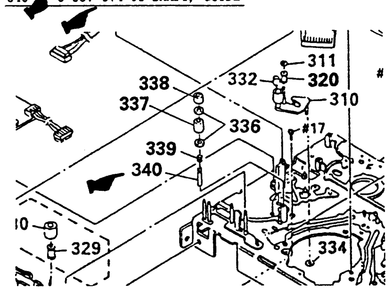
204
#13
203
#14
207
#8
203
201
202
203
204
#13
not supplied
205

2. PARTS CHANGED

☛ : Changed portion.

Page	FORMER				NEW			
	Ref.No	Part No	Description	Remark	Ref.No	Part No	Description	Remark
60	307	3-368-428-01	SHAFT (ROLLER GUIDE) not supplied		307 340	3-908-644-01 3-337-674-01	SHAFT (ROLLER GUIDE) SHAFT, GUIDE	
								
61	* 359	3-368-411-01	SLIDER (ROLLER LOCK)				not used	

311
338
332
320
337
310
336
#17
339
not supplied
10
329
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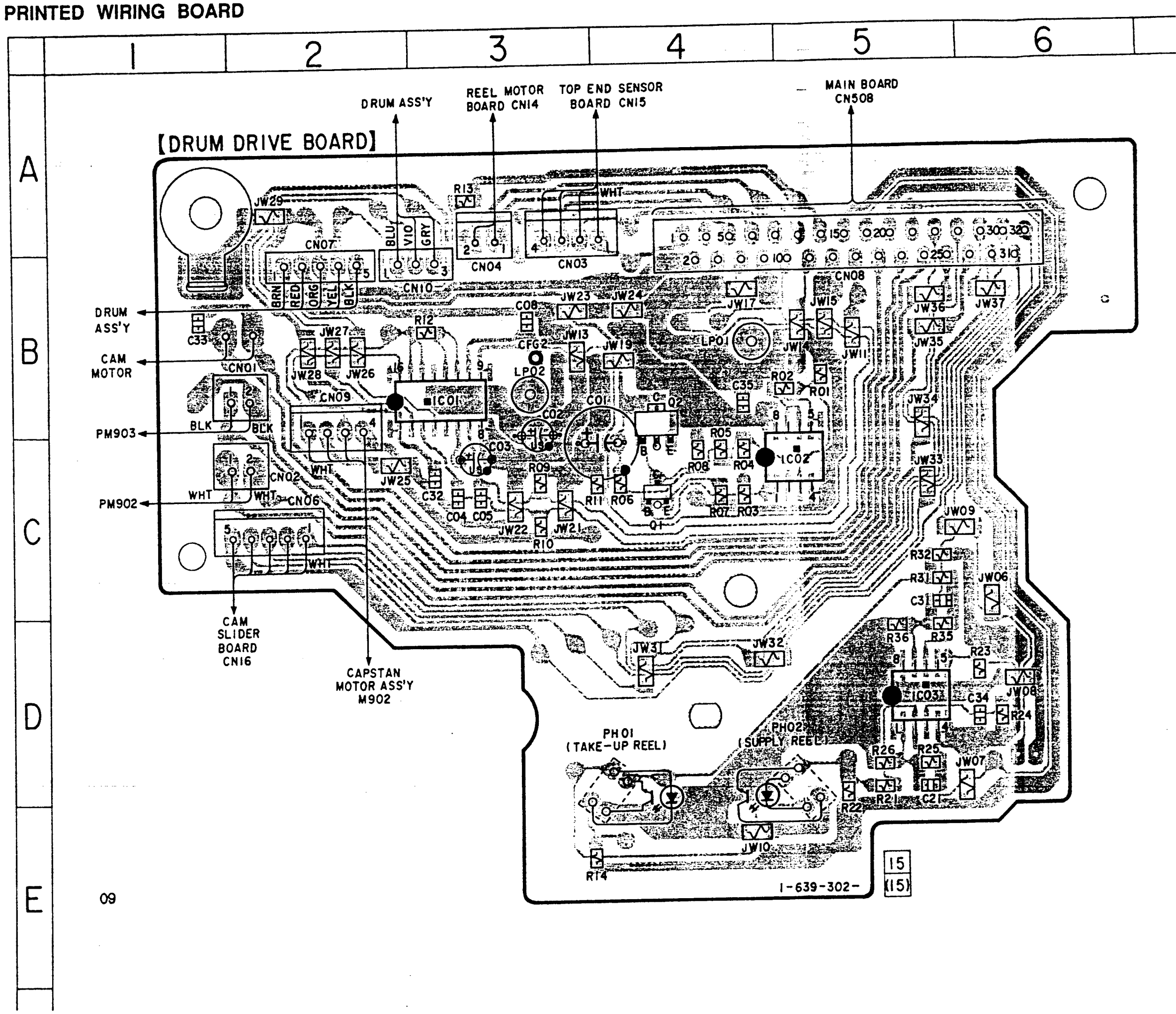
311
338
332
320
337
310
336
#17
339
340
10
329
334

- Revise your service manual as shown below due to parts supply classification has been changed.

Page	CURRENT				REVISED			
	Ref.No	Part No	Description	Remark	Ref.No	Part No	Description	Remark
60	309	X-3337-643-1	GUIDE (RIC) ASSY, ROLLER		309	X-3371-518-1	ROLLER GUIDE ASSY	

3. BOARD CHANGE

PRINTED WIRING BOARD



1
2
3
4
5
6
A
B
C
D
E
DRUM ASS'Y
REEL MOTOR BOARD CN14
TOP END SENSOR BOARD CN15
MAIN BOARD CN508
[DRUM DRIVE BOARD]
DRUM ASS'Y
CAM MOTOR
PM903
PM902
CAM SLIDER BOARD CN16
CAPSTAN MOTOR ASS'Y M902
PH01 (TAKE-UP REEL)
PH02 (SUPPLY REEL)
CN01
CN02
CN03
CN04
CN06
CN07
CN08
CN09
CN10
IC01
IC02
IC03
Q1
Q2
LP01
LP02
CFG2
C01
C02
C03
BLU
VIO
GRY
BRN
RED
ORG
YEL
BLK
WHT
1-639-302-
15
(15)
09

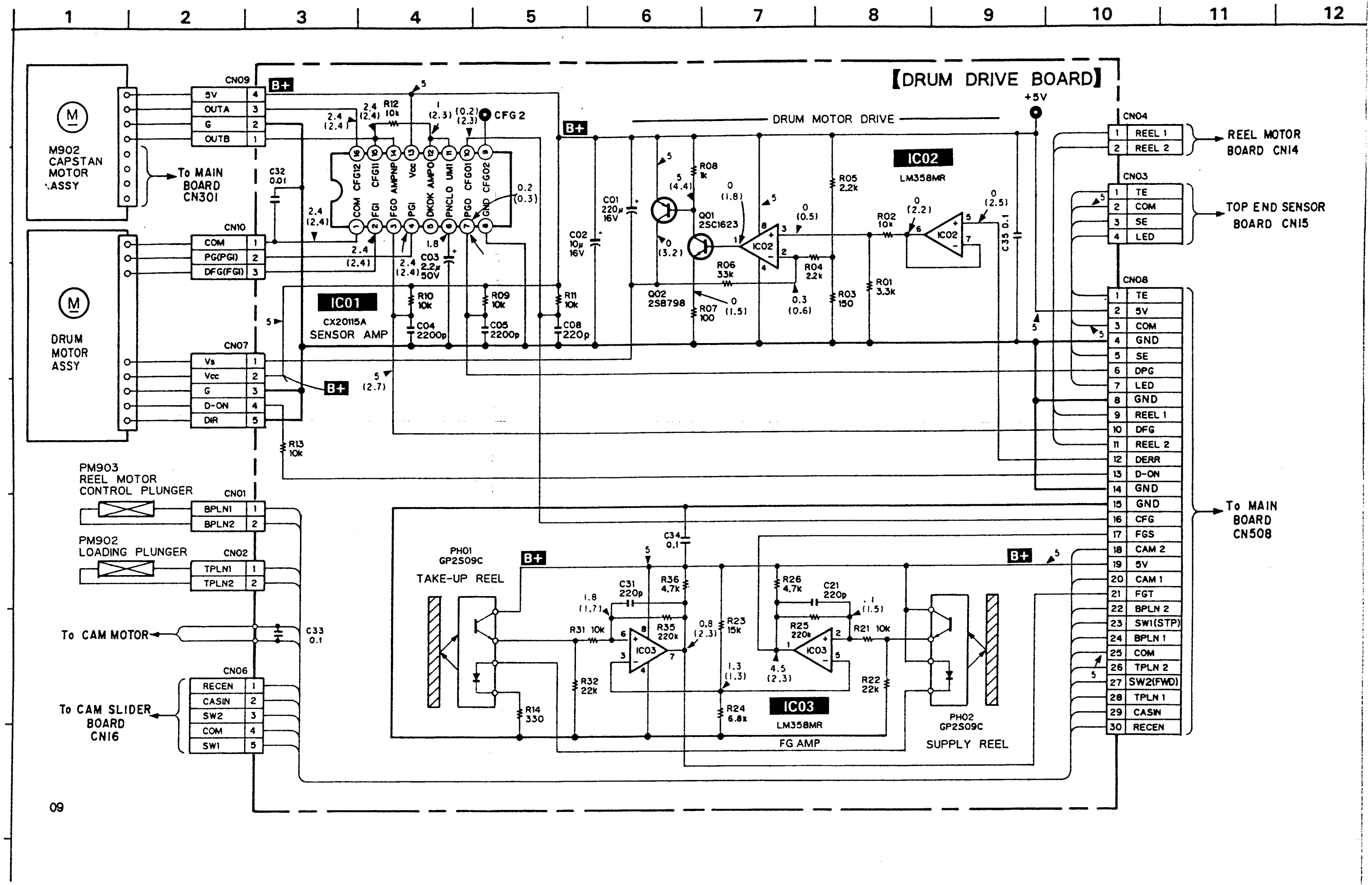
- **Semiconductor Location**

Ref. No.	Location
IC01 IC02 IC03	B-3 C-5 D-5
PH01 PH02	D-4 D-4
Q01 Q02	C-4 B-4

Note:

- o—— : parts extracted from the component side.
- —— : parts extracted from the conductor side.
- ▨ : Pattern from the side which enable seeing.

CHEMATIC DIAGRAM


1
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12
[DRUM DRIVE BOARD]
M902 CAPSTAN MOTOR ASSY
To MAIN BOARD CN301
DRUM MOTOR ASSY
CN09
5V
OUTA
G
OUTB
CN10
COM
PG(PGI)
DFG(FGI)
CN07
Vs
Vcc
G
D-ON
DIR
B+
C32 0.01
R12 10k
CFG 2
IC01
CX20115A
SENSOR AMP
COM
FGI
FGO
PGI
DKDK
PNCLO
PGO
GND
CFG12
CFG11
AMPNP
Vcc
AMPO
UM1
CFG01
CFG02
C03 2.2μ 50V
R10 10k
C04 2200p
R09 10k
C05 2200p
R11 10k
C08 220p
R13 10k
DRUM MOTOR DRIVE
C01 220μ 16V
C02 10μ 16V
R08 1k
Q01 2SC1623
Q02 2SB798
R06 33k
R07 100
R04 22k
R03 150
R05 2.2k
R01 3.3k
R02 10k
IC02
LM358MR
C35 0.1
+5V
CN04
REEL 1
REEL 2
REEL MOTOR BOARD CN14
CN03
TE
COM
SE
LED
TOP END SENSOR BOARD CN15
CN08
TE
5V
COM
GND
SE
DPG
LED
GND
REEL 1
DFG
REEL 2
DERR
D-ON
GND
GND
CFG
FGS
CAM 2
5V
CAM 1
FGT
BPLN 2
SW1(STP)
BPLN 1
COM
TPLN 2
SW2(FWD)
TPLN 1
CASIN
RECEN
To MAIN BOARD CN508
PM903 REEL MOTOR CONTROL PLUNGER
CN01
BPLN1
BPLN2
PM902 LOADING PLUNGER
CN02
TPLN1
TPLN2
To CAM MOTOR
C33 0.1
CN06
RECEN
CASIN
SW2
COM
SW1
To CAM SLIDER BOARD CN16
PH01 GP2S09C
TAKE-UP REEL
C34 0.1
C31 220p
R36 4.7k
R31 10k
R35 220k
R32 22k
R14 330
R23 15k
R24 6.8k
IC03
LM358MR
FG AMP
R26 4.7k
C21 220p
R25 220k
R21 10k
R22 22k
PH02 GP2S09C
SUPPLY REEL
09

Note:

- All capacitors are in μF unless otherwise noted. pF:μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- B+ : B+ Line
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
  no mark : STOP
  ( ) : PLAY
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.

DRUM DRIVE

ELECTRICAL PARTS LIST

NOTE:

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μA..., uPA...: μPA..., uPB...: μPB...,
  uPC...: μPC..., uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH

Ref. No.	Part No.	Description			Remark
*	A-2056-488-A	DRUM DRIVE BOARD, COMPLETE **************************			
*	3-343-491-01	HOLDER (S SENSOR B)			
*	4-870-539-00	PLATE, GROUND			
		< CAPACITOR >			
C01	1-126-176-11	ELECT	220uF	20%	10V
C02	1-126-157-11	ELECT	10uF	20%	16V
C03	1-124-257-00	ELECT	2.2uF	20%	50V
C04	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C05	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C08	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C21	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C31	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C32	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C33	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C34	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C35	1-163-038-91	CERAMIC CHIP	0.1uF		25V
		< CONNECTOR >			
* CN01	1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			
* CN02	1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			
* CN03	1-564-338-00	PIN, CONNECTOR 4P			
* CN04	1-564-336-00	PIN, CONNECTOR 2P			
* CN06	1-564-339-00	PIN, CONNECTOR 5P			
CN07	1-564-721-11	PIN, CONNECTOR (SMALL TYPE) 5P			
* CN08	1-568-872-11	SOCKET, CONNECTOR 30P			
* CN09	1-564-706-11	PIN, CONNECTOR (SMALL TYPE) 4P			
* CN10	1-564-719-11	PIN, CONNECTOR (SMALL TYPE) 3P			
		< IC >			
IC01	8-752-060-73	IC CX20115A-T4			
IC02	8-759-502-80	IC LM358M			
IC03	8-759-502-80	IC LM358M			
		< JUMPER RESISTOR >			
JW06	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW07	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW08	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW09	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW10	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW11	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW13	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW14	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW15	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW17	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW19	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW21	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW22	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW23	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW24	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW25	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW26	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW27	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW28	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW29	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW31	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW32	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW33	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW34	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW35	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW36	1-216-296-91	CONDUCTOR, CHIP	(3216)		
JW37	1-216-296-91	CONDUCTOR, CHIP	(3216)		
		< PHOTO INTERUPTER >			
PH01	8-719-939-23	PHOTO INTERRUPTER GP-2S09-C			(TAKE UP REEL)
PH02	8-719-939-23	PHOTO INTERRUPTER GP-2S09-C			(SUPPLY REEL)
		< TRANSISTOR >			
Q01	8-729-120-28	TRANSISTOR 2SC1623-L5L6			
Q02	8-729-101-07	TRANSISTOR 2SB798-DL			
		< RESISTOR >			
R01	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R02	1-216-073-00	METAL CHIP	10K	5%	1/10W
R03	1-216-029-00	METAL CHIP	150	5%	1/10W
R04	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R05	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R06	1-216-085-00	METAL CHIP	33K	5%	1/10W
R07	1-216-025-91	METAL GLAZE	100	5%	1/10W
R08	1-216-049-91	METAL GLAZE	1K	5%	1/10W
R09	1-216-073-00	METAL CHIP	10K	5%	1/10W
R10	1-216-073-00	METAL CHIP	10K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R11	1-216-073-00	METAL CHIP	10K	5%	1/10W
R12	1-216-073-00	METAL CHIP	10K	5%	1/10W
R13	1-216-073-00	METAL CHIP	10K	5%	1/10W
R14	1-216-037-00	METAL CHIP	330	5%	1/10W
R21	1-216-073-00	METAL CHIP	10K	5%	1/10W
R22	1-216-081-00	METAL CHIP	22K	5%	1/10W
R23	1-216-077-00	METAL CHIP	15K	5%	1/10W
R24	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R25	1-216-105-91	METAL GLAZE	220K	5%	1/10W
R26	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R31	1-216-073-00	METAL CHIP	10K	5%	1/10W
R32	1-216-081-00	METAL CHIP	22K	5%	1/10W
R35	1-216-105-91	METAL GLAZE	220K	5%	1/10W
R36	1-216-065-00	METAL CHIP	4.7K	5%	1/10W

****